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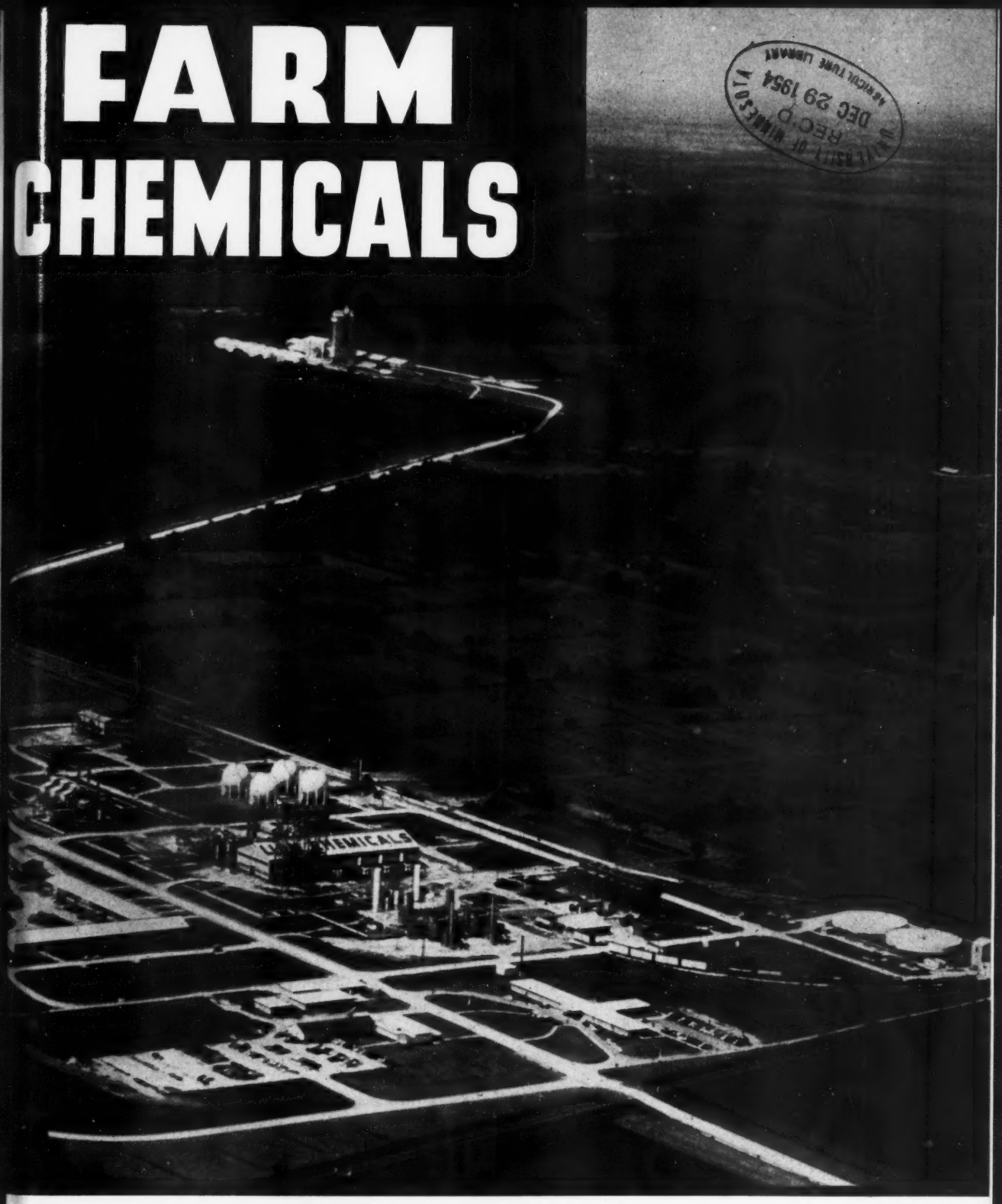

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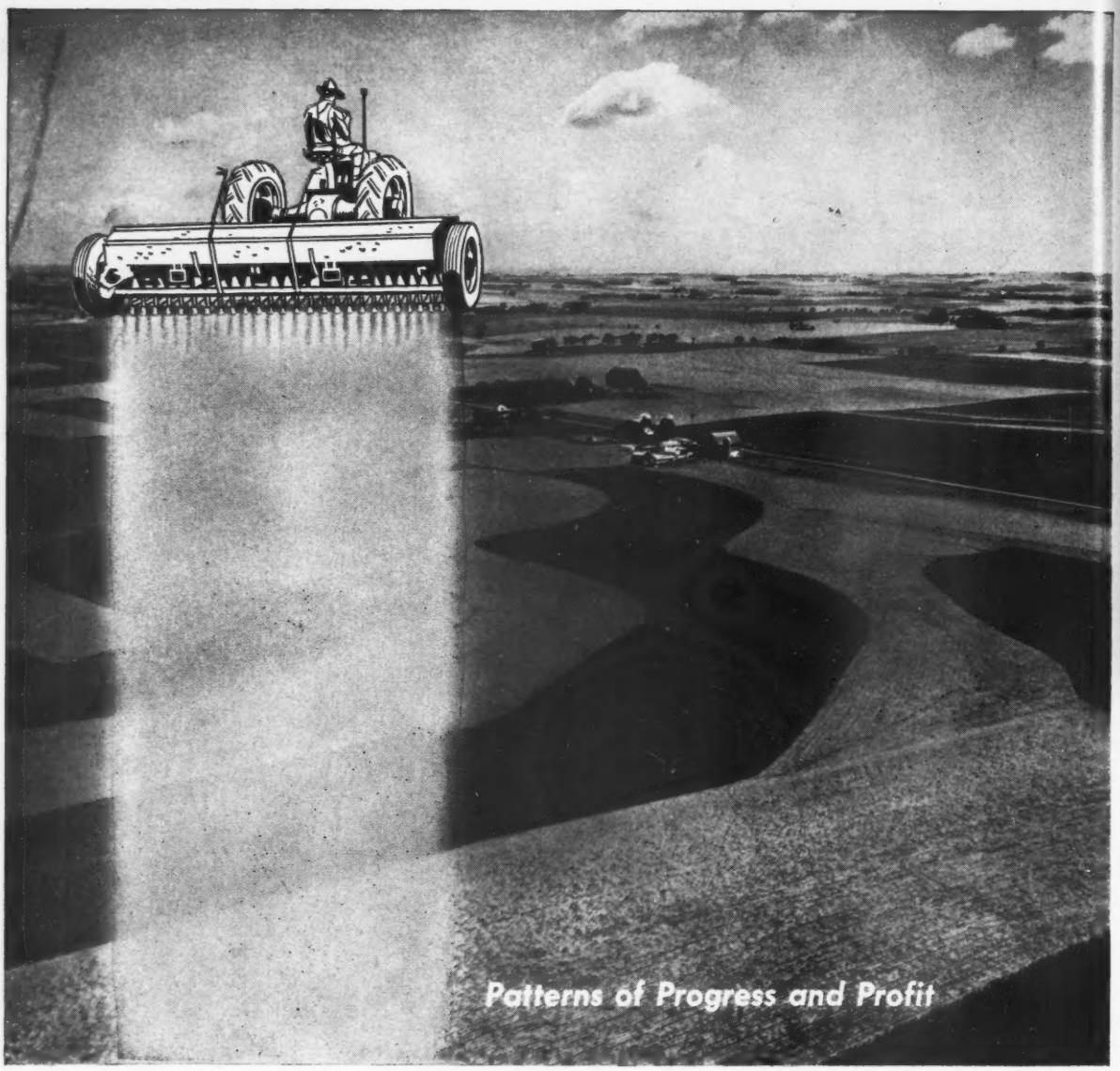

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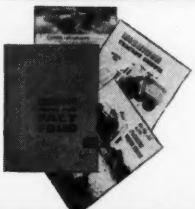

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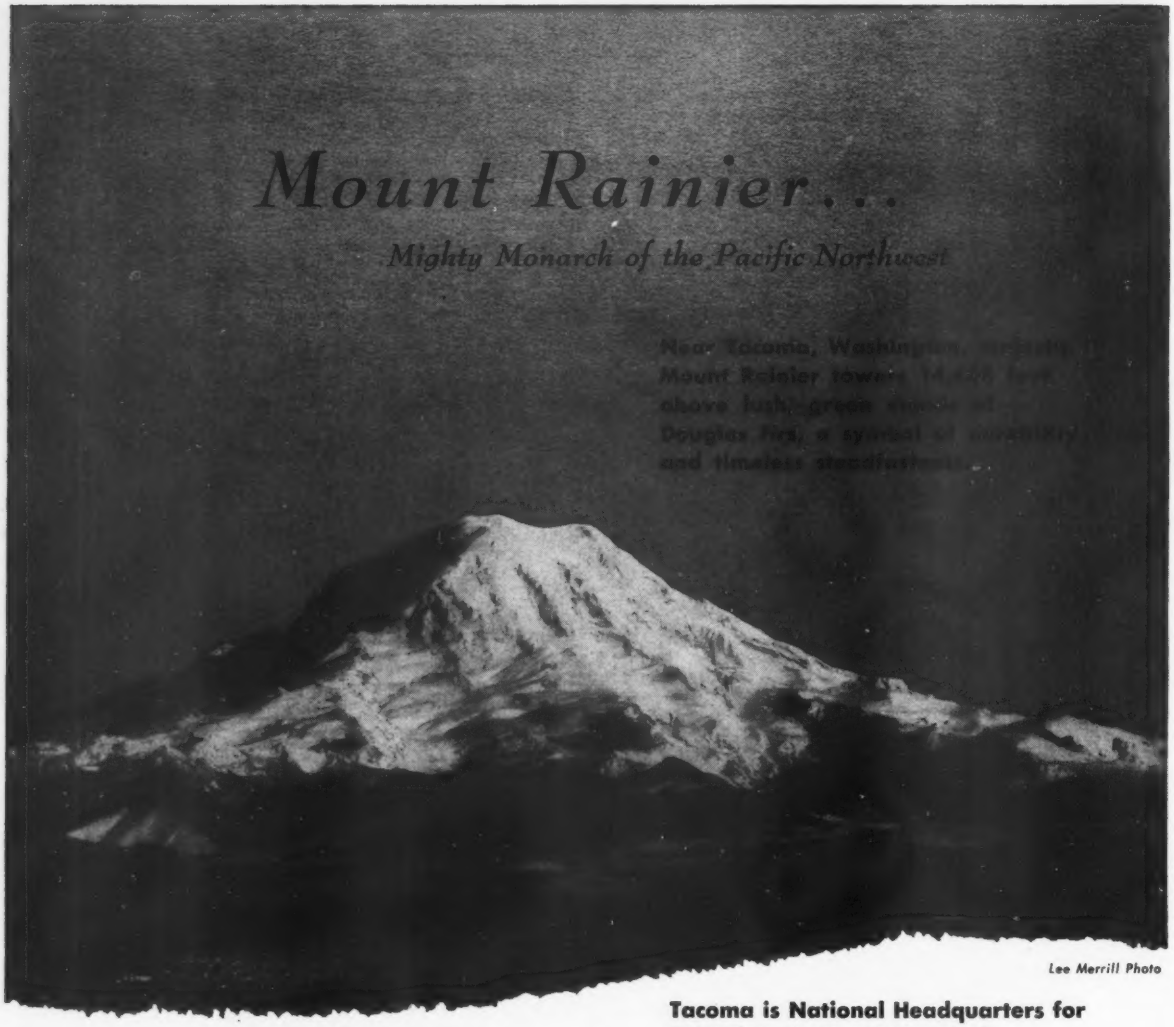

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Vol. 117 **DECEMBER, 1954** **No. 12**

Cover Story

Lion Oil co.'s Barton plant, a petrochemical installation near New Orleans, La., has an annual capacity of 20,000 tons of anhydrous NH_3. Administrative, anhydrous ammonia and nitric acid areas are in foreground. About 1½ miles away (top center) is the ammonium nitrate area with its two 208 foot pelleting towers.

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In this issue . . .

Control of the corn rootworm in the Midwestern corn belt represents a market you may wish to investigate. Development of "Deactivator H" by Velsicol corp. for use in Heptachlor formulations will help extend use of the pesticide in this direction. For a story on this new development and the promising Midwest market see page 24.

A National Plant Food Institute will represent the fertilizer industry beginning July 1, 1955. Our two present plant food associations have approved a merger proposal calling for formation of the new organization as described on page 27.

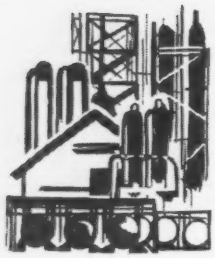
Although the highlight of NFA's southern convention was approval of the trade group merger, delegates enjoyed excellent talks by Dr. Richard Bradfield and Oris V. Wells, Beginning on page 30 is our coverage of the meeting and the speeches.

Field trials of dieldrin are included in the Philippine malaria pilot project, and it looks like Shell Chemical's pesticide will be of increasing importance in control of the disease. See page 36 for a brief story.

Meetings of two other trade groups are reviewed in this issue, the Western Agricultural Chemicals Association on page 40 and the Canadian Agricultural Chemical Association on page 45. Of special interest to those concerned with the Canadian market is announcement (page 28-29) of a new monthly publication, CANADIAN FARM CHEMICALS, which begins coming off the press this January.

Sessions of the American Society of Agronomy included a number of papers worthy of special attention. An article including summaries of several of these begins on page 48.

The index to 1954 FARM CHEMICALS editorial material begins on page 52.



INDUSTRY News

No Fast Write-Off for N Storage

Storage facilities for the ever increasing supply of liquid nitrogen materials were discussed at a Washington conference called by the Business and Defense Services Administration. Industry representatives did not see a need for an expansion goal for facilities and subsequent to the meeting, the ODM announced that it agreed with BDSA recommendations that such a move was unnecessary.

Nitrogen producers and distributors attending the meeting told Government officials that although additional storage was needed the problem could be solved by industry without the assistance of an expansion goal.

Action was precipitated by filing of several applications for certificates and at the conference some representatives contended that a goal would be of financial assistance to small distributors. Other industry men suggested that tax laws do not provide enough incentive under tax write-offs.

Points under discussion included not only extension of the tax amortization program but also whether such a program should be limited to anhydrous ammonia or extended to other nitrogen forms and whether concessions should be limited to facilities for producers and distributors or extended to farmers.

Canadian Ortho Formed

A Canadian subsidiary, Ortho Agricultural Chemicals, Ltd., has been formed by California Spray-Chem. corp., according to an announcement by Calspray president, Arthur W. Mohr. R. T. Wilson, secretary of Standard Oil of British Columbia, will serve as Canadian executive officer of the new organization with headquarters at 906 Marine Bldg., 355 Burrard St., Vancouver 1, B. C.

Ortho products will be formulated and distributed in a new modern dust mill and warehouse in New Westminster, B. C. Although present distribution will be limited to British Columbia and Alberta, the company expects to expand into the entire Dominion as additional facilities are developed.

Distributor in the two provinces is the Green Valley Chemical co., Ltd. of New Westminster.

Amizol Patent Granted ACP

A patent on the use of 3-amino-1, 2, 4-triazole as an herbicide and cotton defoliant has been granted W. W. Allen, chief formulating chemist of American Chemical Paint co.'s Agricultural div.

The chemical, which formerly was used only in small quantities in photographic laboratory work, is now undergoing world-wide field tests in its new roles. It will be formulated and sold by American Chemical Paint co. under the trade name Amizol.

American Cyanamid co. will manufacture 3-amino-1, 2, 4-triazole and has been licensed under ACP's patent to market it as an herbicide and defoliant in the United States.

Curry Chemical to Phillips

All capital stock of Curry Chemical co. and 14 affiliated companies has been acquired by Phillips Petroleum co., according to K. S. Adams, chairman, and Paul Endacott, president of Phillips. The Curry companies are engaged in wholesale and retail distribution of agricultural ammonia and manufacture and wholesale distribution of mixed fertilizers as well as separate fertilizer materials. No changes are contemplated in operations of the companies, and their personnel.

Phillips reports that the recent acquisition marks no change in its marketing policies of selling its products through independently operated organizations.

In addition to the home offices and a fertilizer mixing plant at Scottsbluff, properties consist of warehouses and about 100 agricultural ammonia distributing plants located mainly in Nebraska, with others in Wyoming, Montana, South Dakota and Kansas.

W. A. Curry, Jr., who heads Curry Chemical co., will resign to devote full time to other business interests.

Economists See Farm Chemical Use Up in '54

USDA economists reporting to the annual Washington outlook conference said that it appears pesticide consumption is up some 24 per cent this year over 1953 with some 260 million pounds of major pesticides (ground sulfur excluded) consumed. Although figures are yet incomplete the totals include 80 million pounds of copper sulfate (up 20 million) and 70 million pounds of DDT (up 10 million).

On the other side of the farm chemicals picture, USDA experts stated that they expect farmers to use a little more fertilizer in 1955 than this year, in terms of plant nutrients, adding that prices will probably remain unchanged.

Prices of pesticides are also expected to remain about the same next year. In September manufacturers' prices of BHC and DDT were slightly higher than a year earlier, but 2,4-D and lindane were down slightly.

Geigy Leland, Miss. Office

Geigy Agricultural Chemicals announced recently the consolidation of its Aberdeen, N. C., and McGregor, Tex., branch offices into one office centrally located in Leland, Miss., in conjunction with its recently constructed and enlarged manufacturing plant at Leland.

E. L. Jarrett, Sr. has been named manager of the Southern territory comprising cotton belt states and Florida.

Construction work at the Leland plant and installation of additional equipment now is in progress and will be completed by the end of the year.

New West Coast Plant

A new company, Hughes-Johnson Chemical co., is building a superphosphate plant at 12005 North Burgard Road, Portland, Ore., and installing a cone type continuous acidulator. The plant, which will have a capacity of 20,000 tons per year, is expected to be in operation in December, 1954.

Partners in the new firm are J. Ross Hughes and Ralph W. Johnson. Hughes is president of Meeker-Hughes co., Salem, Ore. Both men will be active in the management of the new company.

Pennsalt, I. P. Thomas Vote on Stock Transfer

Share owners of I. P. Thomas & Son co. soon will vote on a stock transfer plan which would bring their organization into Pennsylvania Salt Manufacturing co. as a new operating division, Pennsalt recently reported.

"Although I. P. Thomas co. has been, and will continue to be prominently identified with the fertilizer field," Pennsalt president George B. Beitzel stated, "its modern facilities for the production of basic materials for many of our industrial and specialty chemical products are particularly attractive to us."

Pending favorable action by Thomas stockholders, the company's plant at Mantua Point, Paulsboro, N. J., will become the 12th in Pennsalt's nationwide organization.

Cotton Insect Conference

E. F. Knipling, chief of the USDA entomology research branch, and Dr. F. C. Bishopp, in charge of the cooperative pink bollwork project, will be featured speakers at the annual Belt-wide Cotton Insect Control conference to be held in Dallas, Tex., on Dec. 2-3.

About 500 are expected to attend sessions that will review post-war developments in pesticides and application equipment and discuss opportunities for improvement in control programs. All sessions will be held in the Hotel Adolphus.

Idaho Super Plant for Jefferson Lake Sulphur

More phosphates for the West will soon be available, according to a recent announcement from Jefferson Lake Sulphur co., New Orleans. The firm has announced plans for construction of a triple superphosphate, phosphoric acid and a sulfuric acid plant in southwestern Idaho, probably in the Bear Lake area.

The new plant will have a capacity of some 80,000 tons per year triple super and is expected to be completed by the end of 1955. Cost will probably exceed $3 million. Sulfur will be shipped from Louisiana or Wyoming to the new unit.

Phosphate Wash Plant

A washing plant for processing phosphate rock is being constructed by The Mine Equipment co. at Columbia, Tenn. Representing an investment of about $200,000, it is expected to be in operation this year. Company president is Wayne Pressnell. Former manager of the TVA phosphate plant at Columbia, H. R. Mosley, also is associated with the organization.

Tailings

T. L. Aamodt, Minnesota state entomologist, reports that some $40 million in crop savings resulted from the 1954 armyworm control program in which 1,186,500 acres of Minnesota crops were treated. Losses due to failure to treat ran just under $12 million.

◆ ◆ ◆ ◆

Eastern States Farmers Exchange is again using a discount on December-February fertilizer purchases. Members save from $1.50 to $3.00 per ton depending on when spring requirements are accepted. Last season a record 29,636 tons of mixed goods moved from its four plants during the November-February period.

◆ ◆ ◆ ◆

Fertilization of alfalfa-brome pastures with 500 pounds per acre of 0–20–20 has been tested at the Rosemont, Minn., experiment station. Value of beef produced on fertilized land was $66.46 per acre compared to only $29.06 on the check.

◆ ◆ ◆ ◆

A new in-situ epoxidation process promises vast new markets for agricultural fats and oils, according to Dr. Frank Greenspan and Ralph J. Gall of Buffalo Electro-Chemical co. Speaking before an American Oil Chemists' Society meeting, they described how crop derivatives such as soybean oil and oleic acid esters with hydrogen peroxide yield superior vinyl plasticizers.

◆ ◆ ◆ ◆

Data compiled by NFA shows Canada as the USA's Number one 1953 fertilizer purchaser, buying $9.2 million worth compared to $5.6 million for the runner-up Far West (including India and Australia).

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Sweetened Malathion baits can kill from 50,000 to 70,000 flies in one barn in less than an hour, according to Maryland reports. Cost per application for most barns runs from 40 to 80 cents.

New Anti-Dumping Rules

Changes in regulations under the Anti-Dumping Act have been proposed by the Treasury department. It has suggested that new regulations change the definition of fair value to be generally the price usually received by the producer for his goods in ordinary business transactions.

At present, it is linked to foreign market value. Under the proposed ruling, it could be the price charged consumers in the country of origin or, for goods produced mainly for export, the price charged to importers in third countries.

Prices charged by other foreign manufacturers of similar goods could be used under the new regulations when access to records of the producer in question are unavailable or inadequate.

1953-54 TVA Fert. Production

TVA fertilizer production for the fiscal year ended June 30, 1954, included 188,328 tons of ammonium nitrate and 93,706 tons P_2O_5 in concentrated superphosphate, calcium metaphosphate and fused tricalcium phosphate, according to a recent TVA report. Its entire fertilizer and munitions development program earned a net income of $492,140, compared with $79,408 earned in 1953.

Pyrethrum Market Standards

New regulations governing standards of quality and marking of containers for pyrethrum flowers to be exported from the Belgian Congo and Ruanda-Urundi have been established by legislative ordinances and have been published in the Bulletin Administratif du Congo Belge. Containers in which the flowers are to be shipped must be marked with the name of the exporter, region or province in which produced, grade number of product and number of certificate of quality.

Regulation details may be obtained from the Near Eastern and African div., Bureau of Foreign Commerce, US Department of Commerce, Washington 25, D. C.

New Systemics Show Promise on Cotton Pests

USDA entomologists have reported preliminary but promising results with new systemic insecticides to control a variety of cotton insect pests, including some which chew on plants.

All of the experimental materials tried are organic chemicals which have systemic qualities; they can be absorbed into a plant and carried by its sap to make the stalk and foliage, and in some cases the fruit, toxic to feeding insects.

The two most promising compounds are known to the experimenters as L-11-6 and 12008. Their chemical names are, respectively, O,O-diethyl S-ethyl mercaptomethyl dithiophosphate and O,O-diethyl S-isopropyl mercaptomethyl dithiophosphate.

Despite the excellent results which have come from these early tests, the entomologists emphasized that much more must be learned about these systemics before they can be recommended for use to the cotton producer. They must find how best to treat seed with the materials so that germination will not be lowered; how the chemicals affect plant growth and whether the insecticides tend to build up hazardous residues in cotton plants.

Clemson Fertilizer Conference

Conference speakers included Dr. M. D. Farrar, B. D. Cloaninger, Dr. Ivan E. Miles and Dr. R. F. Poole.

MORE efficient use of fertilizer and better farming resulting in more profitable production were the high points stressed at the annual South Carolina Fertilizer conference held at Clemson College Nov. 3-4.

The two day meeting which ended at noon, Nov. 4, was attended by more than 300 representatives of the fertilizer industry.

Bruce D. Cloaninger, head of the Department of Fertilizer Inspection and Analysis, and who was in charge of the Arrangements committee, said that this was one of the best attended conferences the group has ever held.

Dr. M. D. Farrar, dean of the School of Agriculture, struck the keynote of the meeting in his opening remarks on the afternoon of Nov. 3. Dr. Farrar stressed the importance of better farming through more efficient use of fertilizer resulting in more profitable production.

A feature of the conference was a tour of the college campus and experiment station pastures. Dr. W. A. King of the Clemson Dairy department was on hand to conduct the pasture tour which included some of the winter grazing plots on the experiment station dairy farm. Dr. Farrar conducted the tour of the campus which included a look at the recently completed student barracks. The tour also included the new agricultural center which is now under construction.

A highlight of the meeting was a talk by Dr. Ivan E. Miles, leader of Extension Agronomy Work at Mississippi State College. Dr. Miles spoke at a banquet held for the group at the Clemson House Hotel Wednesday night Nov. 3. He was introduced by Dr. W. R. Paden, agronomist, South Carolina Experiment Station, Clemson, after Dr. R. F. Poole, president of Clemson College, had welcomed the group to the campus.

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Research on products sold to or bought from farmers—potential sales—market trends—new types of products—procurement—distribution . . . How farmers think—how they react—is Key to farm sales . . . Let us discuss your problem with you . . . Write for Free Booklet . . . **Market Research Division, Doane Agricultural Service, Inc., Box 972, 5142 Delmar Blvd., St. Louis 8, Mo. (Telephone, FOrest 1-2800).**

Ketona Contract to Fluor

The contract for engineering and construction of Ketona Chemical corp.'s projected anhydrous ammonia plant has been awarded to The Fluor corp., according to a recent Ketona announcement. All auxiliary facilities and services for the plant are to be provided by Ketona under separately negotiated contracts, engineering for which will be under the direction of Hercules Powder co., co-owner of Ketona with Alabama By-Products corp.

To be located on the I&N Railroad at Ketona, Ala., the plant is expected to have an annual capacity of 45,000 tons of anhydrous ammonia. It is scheduled to be in operation late in 1955, and is said be to unique in that it will be the first American synthetic ammonia plant to be based entirely on coke oven gas.

Kerr-McGee & NFU Potash

Thirteen thousand acres of potash land, value of which is estimated at $120 million, in Southeastern New Mexico are to be developed by Kerr-McGee Oil Industries and the National Farmers Union, according to present plans.

Tentative plans call for creation of a new corporation, jointly financed by the farmers union and Kerr-McGee, which will construct a mining plant near Artesia and then distribute and market the potash, stated Ross Taylor, director of publicity for the farmers group.

Bradley & Baker Named Miss. River Fuel Agent

Bradley and Baker will sell Mississippi River Fuel corp.'s ammonium nitrate, anhydrous ammonia and nitrate solution, according to an announcement by John L. Sanders, sales manager of Mississippi River Chemical co., the fuel corporation's newly formed chemical division.

Fluor corp. is building the company's plant at Selma, Mo. Production is expected during the fall of 1955.

Save Money on

PESTICIDE FORMULATIONS

We will make on order, in any concentrate, formulations of the following:

2,4-D, 2,4,5-T, MCP, CHLORO-IPC, DDT, BHC, TOXAPHENE, HEPTACHLOR, CHLORDANE, LINDANE, MALATHION

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67 Butner St., Des Moines, Iowa

Pesticide Competition Grows in Peru, Argentina

United States pesticide products are in good demand in Peru and Argentina, but competition from other producing areas is on the increase, according to pesticide market surveys in the two countries, part of a worldwide survey of the industry being conducted by the US Department of Commerce.

In Peru, because of high quality, US products are in greatest demand even though they are more costly. However, because of price differences competition is growing from European sources, USDC stated. It was advised that US exporters quote competitive prices at all times.

Shortage of dollars was found to be a major deterrent to purchase of US products in Argentina, although this country, too, favors US pesticides. Widespread dissemination of technical literature, particularly on newer products; field tests by this country's firms and active investigations of local pest control problems were advised by the department to improve the position of US pesticides in the Argentine market.

Home Lawn Market Has Big Potential, Says NFA

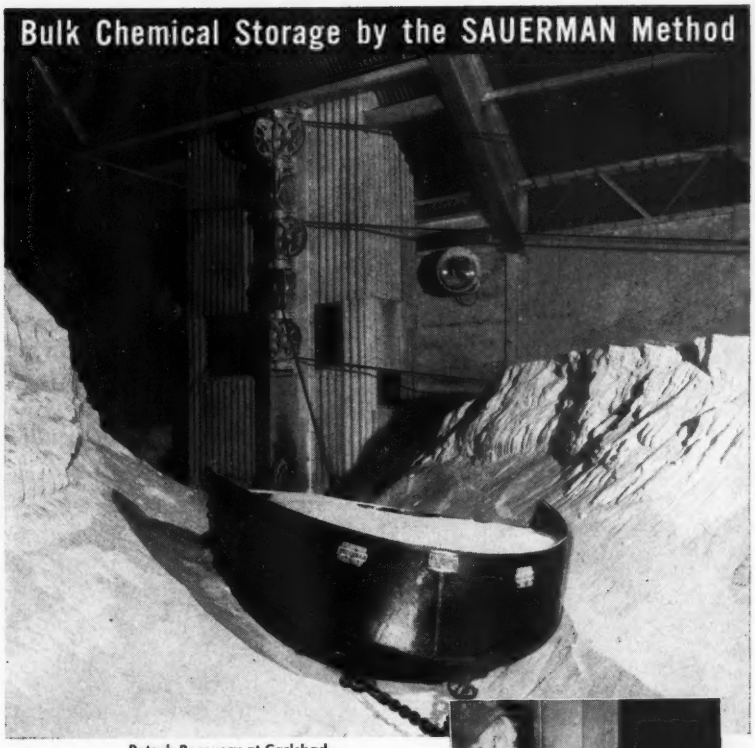
When it comes to fertilizer usage, the lawn in front of one home may be just a drop in the bucket, but all lawns in the U. S. make up a tremendous acreage and an enormous market, reports the National Fertilizer Association in its NFA FERTILIZER NEWS.

More than a million tons of plant food would be consumed if every 1,000 square feet of lawn in this country were given only 25 pounds of fertilizer, the association states.

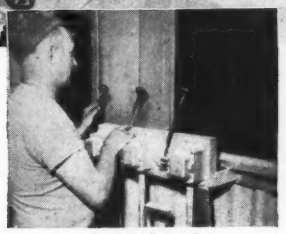
Sewing Contest Winners

Winner of a nation-wide sewing contest, Mrs. W. H. Schwabe is crowned International Cotton Bag Sewing Queen by W. S. Brock, vice president, Chase Bag. co. Mrs. C. S. Martin and Mrs. R. T. Grey are 2nd and 3rd place winners, respectively. Sponsored by Textile Bag Manufacturers Association and National Cotton Council, the contest drew more than 35,000 individual sewing entries.

Bulk Chemical Storage by the SAUERMAN Method



Potash Recovery at Carlsbad



Remote Control

How Sauerman Scraper Storage Reduces Costs

This prominent producer of basic chemicals uses Sauerman 1½-cu. yd. Scraper Machines to reclaim potash at 200 tph. Total area covered is approximately 125 by 370 ft. Building capacity is 60,000 tons.

Here's how a Sauerman Machine cuts costs:

One operator, located in a safe station overseeing the entire area, can recover practically 100% of all stockpiled material.

All highly machined parts, hoists and motors can be located outside of the building and protected from corrosion and dust.

When parts are replaced—sheaves, clutch or brake linings—the machine is restored to practically new condition, even though it may be twenty or more years old.

Only the Crescent scraper and cables contact the material. The scraper machine can be designed to operate the scraper on top of non-caving material. This allows the scraper to break down any high faces that may be standing.

Sauerman Storage Machines are built for hourly capacities of from 20 to 600 cu. yds. A partial list of chemical producers and manufacturers using some type of Sauerman equipment includes:

Consumers Cooperative Assn.
Crawford Chemical Co.
Davison Chemical Corp.,
Division of W. R. Grace & Co.
Duval Sulphur & Potash Co.
F. S. Royster Guano Co.
Hi-Yield Fertilizer Co.
International Minerals & Chemical Corp.
Lion Oil Co.
Mississippi Federated Cooperatives (AAL)
Meridian, Miss. Branch
Potash Company of America
Red Star Fertilizer Co.
Southern Agricultural Fertilizer Co.
Tennessee Farmers Cooperative
Virginia-Carolina Chemical Corp.

For ways to reduce your material handling costs, write to Sauerman's experienced engineers. Request Catalog E, *Bulk Storage by Scraper* and pertinent Field Reports on the handling of your material by Sauerman Machines.

SAUERMAN BROS. INC.

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USDA NEWS

National acreage allotments of 18,113,208 acres for upland cotton and 46,154 of extra long staple varieties have been set by Secretary Benson. Both quotas are the minimum prescribed by law and represent marketing quotas of 10 million and 30,000 bales respectively. Growers' referendums on both types will be held on Dec. 14.

* * * *

A new research project designed to assist in improvement of Western pastures and range in states from New Mexico to North Dakota has been established under Dr. R. E. Wagner, Belsville, Md. A major portion of the work will deal with range reseeding, fertilization and management with A. C. Hull, headquartered at the Utah ARS, as ARS regional coordinator of the first two phases.

* * * *

New USDA publications:

"Controlling Sagebrush on Range Lands," Farmers' Bulletin 2072

"Corn Production," Farmers Bulletin 2073

"The Seed Corn Maggot on Beans—How to Control It," Leaflet 370

"The Onion Thrips—How to Control It," Leaflet 372.

* * * *

Dr. Roy C. Richmond is aiding in an investigation of control methods for nematodes now threatening Florida citrus groves. Symptoms are known as "spreading decline" of citrus and the malady has already blighted thousands of orange and grapefruit trees in the central "ridge" district of the state.

* * * *

Corn acreage allotments will be in effect next year and an 805-county commercial corn-producing area in which they will be effective has been designated.

Award CFA Scholarships

California Fertilizer Association has awarded two $100 cash scholarships to two students, Walter M. Kliewer and William H. Thompson, of the California State Polytechnic College. Given annually to an outstanding student on crops or soils on each of the campuses at San Luis Obispo and San Dimas, the awards are designed to assist in continuation of their agricultural education.

Recently the association expanded its scholarship program to four $100 awards, two to each of the campuses.

New AP&C Packages

Al F. Swain, American Potash & Chem. corp.'s Agricultural Chemicals div. sales manager, displays partial group of the company's newly-designed agricultural chemical packages.

Lime Usage Down in 1953

The figures differed slightly, but both the National Soil Conservation committee and the National Lime Association agreed that 1953 agricultural lime consumption dropped a whopping 24 per cent, six and a half million tons, in 1953.

Three factors caused the decline to some 20 million tons usage according to the NLA—tonnage sold with Federal subsidy assistance was reduced by about 33 per cent from 1952, the drought and average farm net dropped slightly below 1952. The NSCC described its views on the causes in two words—red tape. They point out that the Agricultural Conservation Program is turning back over $30 million of its 1953 funds, although many farmers were "denied the soil building assistance they wanted."

As usual Illinois led all states with a total consumption of 2.8 million tons, but the only states reporting noticeable increases were Minnesota, South Carolina and Nebraska.

Aldrin for Mint Pests

Federal label acceptance has been granted for use of aldrin to control mint soil pests. Formulations accepted include the emulsible concentrate, 25 per cent wettable powder, 2 per cent granules and 2½ per cent dust, according to a report from Shell Chemical.

The treatment will control the mint flea beetle larvae, root weevil larvae, wire worms and white grubs which attack peppermint and spearmint plants. Major gum companies have assisted in conducting flavor evaluation tests on mint grown in aldrin-treated soil, and the insecticide has passed all flavor, residue and performance tests, the company states.

"Nickels" Program Continued

On Oct. 15 North Carolina farmers were to vote on whether the Nickels for Know-How program will be continued for another three years.

Through the Nickels program farm people contribute to agricultural research and education a nickel per ton on their feed and fertilizer purchases.

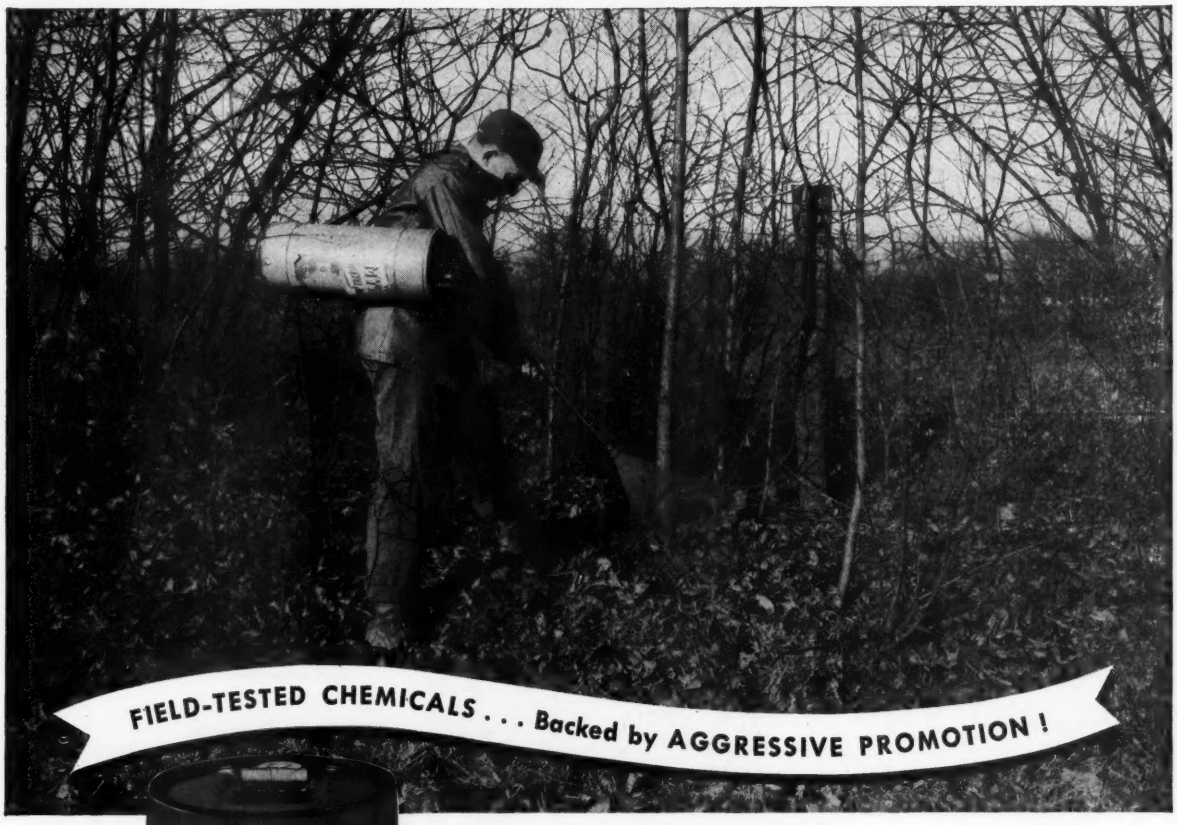
Who's Who in NAC

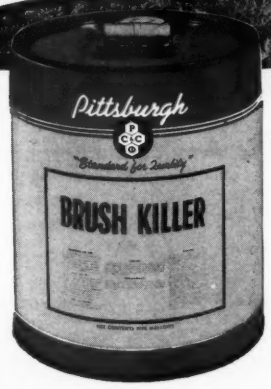
To correct the mis-captioning that occurred on page 21 of the October issue we repeat the picture showing Paul Mayfield, retiring NAC president, W. A. Allen, new president and Fred Hatch, vice president. Shell Chemical's Hatch was incorrectly identified as Hallam Boyd of Commercial Chemical co.

After Nine Months of 1954

	Total Sales		Net Profit	
	1954	1953	1954	1953
American Cyanamid	293.3	287.3	19.7	22.6
American Potash & Chem	18.0	17.1	1.8	1.6
Atlas Powder	43.1	44.1	1.9	1.7
Commercial Solvents	35.1	35.2	1.7	1.8
Diamond Alkali	71.0	65.5	4.3	4.4
Freeport Sulphur	—	—	7.5	6.0
Hercules Powder	140.2	146.8	—	—
Johns-Manville	184.6	188.8	12.7	15.9
Lion Oil	73.6	68.2	7.6	7.4
Monsanto Chemical	253.2	—	16.4	—
Nat'l Distillers Prod	23.2	22.1	9.7	9.1
Phillips Petroleum	586.8	565.7	55.6	55.5
Rohm & Haas	97.2	90.2	8.8	4.8
Olin-Mathieson Chem	355.2	358.	24.5	25.0
Pittsburgh Plate Glass	107.0	114.3	10.6	9.9
Union Carbide & Carbon	667.1	782.9	63.1	78.9
Michigan Chemical Corp	4.6	4.7	−.05	−.01

Cash in on Dormant Spraying with *Pittsburgh* BRUSH KILLERS





Each year, more brush control programs are being conducted in the dormant season. Off-season basal bark application has many advantages. For example, it avoids the danger of damaging growing crops. It distributes labor over the entire year. It requires less equipment than foliage application and it is easier to reach brush in marshy low lands when the ground is frozen.

So be sure you're set to take advantage of these extra off-season sales and profits by having a good stock of Pittsburgh Brush Killers on hand. We'll be glad to send you special newspaper ad mats and window streamers to help you promote dormant season spraying in your area. *Write today!*

W&D 5366

Standard for Quality

ORGANIC INSECTICIDES: Benzene Hexachloride, Toxaphene, and DDT.

ORGANIC PHOSPHATE INSECTICIDES: Parathion Wettable Powders, Parathion Liquid Concentrate, Systox.

WEED KILLERS: 2,4-D Acid, 2,4-D Amine Concentrates, 2,4-D Ester Formulated Concentrates, D4 (Low Volatile 2,4-D Ester), C4 Pre-Emergence Weed Killer, 2,4,5-T Formulations.

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COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

Tonnage Down Nutrients Up

A NFA announcement states that, although consumption of plant nutrients probably increased during 1953-54 over the previous year, a slightly smaller tonnage of fertilizer was used.

Total consumption (U.S.) of 20,290,549 tons as compared to 20,603,448 tons in the previous year was attributed to factors including drought, planting restrictions on major crops and reduced farm income due to lower prices for farm commodities.

Regional increases occurred only in the West North Central and Far Western areas, while South Atlantic states show the greatest decrease, down 300,000 tons or about 4 per cent. West North Central consumption gained 11.5 per cent, up over 200,000 tons.

1955 Garden Trade Shows

One day has been cancelled from the schedules of the Eleventh and Twelfth National Garden Supply Trade Shows for 1955, which are to be sponsored by GARDEN SUPPLY MERCHANDISER magazine.

The 11th exhibition at the Hotel Sherman in Chicago will be held Jan. 10-12, with Sunday, Jan. 9 cancelled, and the 12th National event will take place in New York City on Feb. 1-3, with Jan. 31 eliminated from the previously announced schedule.

Exhibit space for the New York event has been doubled by the addition of the 69th Infantry Regiment Armory, to the 71st Infantry Regiment Armory, where these shows have been held during the past three years.

The Fourth Annual Northwest Garden Supply Trade Show was held on Oct. 19-20 in the Shrine Auditorium, Portland, Ore. Sponsored by the Oregon Feed and Seed Dealers Association, the program included talks and a panel discussion by outstanding speakers on merchandising and advertising.

Among the exhibitors at the show were Chas. H. Lilly co., Swift & co., Virginia-Carolina Chemical corp., Wilson & Geo. Meyer & co. and Zehrung Chemical co.

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We require the services of several young men who can qualify as successful salesmen. Agricultural chemical experience in the dealer-distributor field and some knowledge of the seed and grain trade is a definite requirement. Our rapidly expanding business offers excellent opportunities for advancement. Only men with experience as outlined above are asked to reply. Panogen Division, Ringwood Chemical Corporation, Ringwood, Illinois.

CHEMICAL ENGINEER AVAILABLE. Age 32. Eight years experience including production, maintenance, purchasing and personnel. Address 480, care FARM CHEMICALS, Philadelphia 7.

FERTILIZER SPECIALIST with 25 years experience in tropical soils and crops desires connection with fertilizer firm or raw material producer in North or South America as educational promoter, traveller or salesman. White, age 45, speaks English, Spanish and French. Address "485," care FARM CHEMICALS, Philadelphia 7.

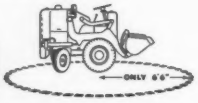
SPEED 1-MAN HANDLING

in plant, yard or box car

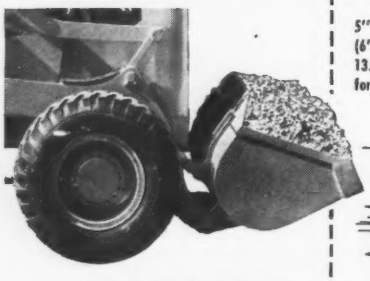
Jaeger Auto-Scoop moves a bigger load, turns shorter, carries faster, can dump higher and farther than comparable 12 cu. ft. scoop loaders. Lowest bucket tilt-back makes possible an always full bucket and lower carry. Simple controls, hydraulic functioning. Write for Catalog L12-4.

20% more lifting capacity (1200 lbs.).

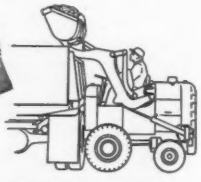
JAEGER LOAD-PLUS



5" shorter turning radius (6'6"). Faster speeds to 13.88 mph in reverse, 7.66 forward.



Low level bucket tilt-back permits full bucket loading, better carrying.



Higher clearance (6'8"), more reach (2'7").

Also available in 1 yd. capacity, with torque converter and power steering, for handling heavier loads to 5000 lbs; 2-wheel or 4-wheel drive.

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U. S. Phosphoric Products

Division

TENNESSEE CORPORATION

Tampa, Florida

OVERSEAS

Brazil. Extensive calcium phosphate rock deposits near Pernambuco are being developed by Fosforita Olinda S/A. Total reserves are estimated at 40 million metric tons, and rock is expected to average over 22 per cent P_2O_5.

Chile. Declining price and a saturated European market had a serious effect on sulfur mine operations. Only seven of 22 plants were in operation in late 1953.

Discovery of an apparently extensive deposit of high grade sulfur in the Julia Segunda and Casualidad areas has been reported.

Colombia. Montecatini co., Italy, has completed negotiations with the Instituto Fomento Industrial Colombia for construction of a plant at Barranca Bermeja. It will utilize natural gas or fuel oil to produce about 50 tons of anhydrous ammonia per day along with nitric acid, ammonium nitrate and urea.

England. Widnes is the site of a 148,000 ton anhydride sulfuric acid plant being built by United Sulfuric Acid corp.

Norway. Norsk Hydro is erecting facilities at Glomfjord, North Norway, for yearly production of 100,000 tons complete fertilizer and 35,000 tons nitrate of lime. Completion is set for mid-1955.

New Zealand. Production of superphosphate in 1953-54 reached a record high of 708,099 long tons, up 15 per cent from the previous year.

A New Zealand Department of Agriculture report states that about 24 per cent of fertilizer used in 1951 was applied by airplanes and nearly 28 per cent of the grassland, top-dressed, was fertilized by air. This year some 200 planes and 46 operations were engaged in such activities.

South Africa. Superphosphate production by Umbogintwini and Somerset West factories of African Explosives and Chemical Industries is expected to total 750,000 tons in 1955.

Spain. Nitrogen fertilizer production was expected to total a record 193,000 metric tons this year. Two new plants are under construction by Empresa Nacional Calvo Sotelo.

Syria. Although the U. S. supplied 60 per cent of Syria's 1953 pesticide imports, European competition is stiffening and American producers may have to extend credit terms and increase promotional activities to retain the market. Consumption in 1953 was a little over 1,000 metric tons.

Turkey. An ammonium sulfate and ammonium nitrate plant at Kutahya, using materials from nearby lignite mines, is planned by the Industrial Nitrogen co. Contracts will soon be awarded for the 117,000 ton facilities.

Venezuela. Sulfur deposits in Sucre state will be developed by the Venezuelan Sulphur Corp. of America. Concessions covering about 43 square miles contain 40 per cent ores, 20 feet or less below the ground. Work will begin soon on a 100,000 ton plant.

People

Harold Mazza, research process engineer for **American Potash & Chemical corp.** at its Trona, Calif., plant, has been appointed assistant director of research for the company. He will direct activities of the New Products div. at the Trona Research laboratory.

Joseph C. Shumacher, until recently vice president and director of research of Western Electrochemical co., has joined AP&C as director of research.

Mazza **Pinigis**

He will direct all research activities of the company and its subsidiaries under D. S. Dinsmoor, vice president in charge of research and development. Schumacher will continue as a director of Western Electrochemical.

New technical service representative for AP&C's Agricultural Chemicals div. is Edwin J. Pinigis, formerly with the Agricultural Chemicals div. of Pittsburgh Coke and Chemical co.

Other personnel changes include promotion of George S. Wheaton to vice president in charge of the Eston Chemicals div.; Thomas F. Edson to vice president in charge of special engineering projects and Richard J. Hefler to a newly-created position as assistant to the president. He will continue his duties as secretary.

American Potash Institute has announced the appointment of Dr. Werner L. Nelson to work with Dr.

Nelson

G. N. Hoffer, Midwest Territorial manager. Dr. Nelson, who joined the staff of North Carolina Agricultural Experiment Station in 1941, became director of the Soil Testing div. of that state's Department of Agriculture in 1949 and since 1951 has been in charge of soil fertility research.

Harold G. Brownson, vice president of Irving Trust co., has been elected a director of **Arkell & Smiths.**

The board of directors of **Atlas Powder co.** last month elected Edward J. Goett a director and vice president in charge of the company's Chemicals, Darco and Commercial Development depts. W. Clayton Lytle has been named general manager of the Atlas Chemicals dept., succeeding Kenneth E. Mulford, who has been appointed assistant to Goett. Lytle is replaced as general manager of explosives by Max E. Colson, former director of explosives operations. Willis E. Collis has been appointed assistant general manager, Explosives dept.; Harry L. Moat, director of explosives production and George W. Thompson, director of explosives sales.

The 1954 Gamma Sigma Delta National Award for Distinguished Service to Agriculture was presented to **Dr. Clyde H. Bailey,** University of Minnesota, at a banquet given in his honor by the Minnesota Chapter in St. Paul on Nov. 4.

Appointment of Dr. John W. Yale, Jr., as plant pathologist for **Brea Chemicals, Inc.** has been announced by Dr. G. S. Schaffel, manager of research. With headquarters at the Union Oil co. research center at Brea, Calif., Dr. Yale will conduct research to develop new products in the farm chemicals field. His initial project will be a study of Western plant diseases and their prevention with products developed by the Brea Research organization, stated Dr. Schaffel.

Yale

Newly named assistant works manager of **Carbide & Carbon Chemicals co.** is K. H. Rowland. He joined the company in 1934 and has served in

various capacities at the Institute and South Charleston, W. Va., plants. He now will make his headquarters in New York.

Died: John T. Hoffman, 53 and A. E. Aletti, 40, director of purchasing and senior project engineer, respectively, for **Catalytic Construction co.** in a crash of a chartered plane near Mount Clemens, Mich. on Oct. 25.

Two appointments to **Commercial Solvents corp.'s** Industrial Chemicals Sales dept.: Richard E. James, formerly with Swift & co., assigned to the Los Angeles district office; Thomas B. Gilday, formerly with Winthrop-Stearns and Northeastern Resin co., assigned to Boston.

Lewis C. Reid has been named assistant sales manager of the Industrial Chemicals dept., **Davison Chemical co.** He goes to his new post from Wyandotte Chemicals corp., where he was Chicago district manager for the Michigan Alkali div.

Reid

Reid attended the University of Virginia, receiving both bachelor's and master's degrees in science.

Diamond Alkali co. has appointed top personnel for its Muscle Shoals, Ala., plant, recently purchased from the Government. Steve Puschaver has been named plant manager; J. R. Horacek, assistant plant manager and John W. Whittleman, personnel manager.

Frank L. Cusak, formerly with Enco Chemical corp., has been named assistant manager of export sales by **Food Machinery & Chemical corp.** He will be headquartered in New York City.

Promotion of Jerry C. Walker to the newly-created post of field sales manager and R. J. Redmond to sales coordinator has been announced by **Frontier Chemical co.**

Gallowhur Chemical corp. has appointed John Geraci vice president in charge of production and development. Before joining Gallowhur in 1952 he had been with Calco Chemical div. as a research and development chemist and Sterone corp. as assistant technical director.

Kenneth F. Rupp has joined the sales organization of **Hammond Bag and Paper co.** and will represent the company in southern Indiana and Kentucky. Rupp recently resigned as assistant sales manager for Raymond Bag co.

Died: Mrs. Herman B. Fultz, wife of the former executive vice president of **Hector Supply co.** and director of The National Fertilizer Association, on Oct. 1 in Miami, Fla.

Hercules Powder co. president, Albert E. Forster, has been elected a member of the National Comittee on Boys and Girls Club Work, an organization which directs the activities of 4-H clubs throughout the nation.

Newly-appointed assistant director of purchases for **Hercules Powder co.** is William A. Hoffman, Jr. Hoffman, who joined Hercules in 1940, succeeds Edwin S. Ladley, who has been named director of the Purchasing dept.

Jim Suter has been appointed a sales engineer by The **Frank G. Hough co.** In this position he will act as liaison between the Sales dept., Hough district representatives and other departments.

Raymond W. Keller has been named staff production manager of the Plant Food div., **International Minerals & Chemical corp.** Formerly associated with Booz, Allen & Hamilton, Keller holds a bachelor of science degree in electrical engineering from the University of Minnesota and a master's degree in business administration from Harvard Graduate School of Business Administration.

Keller

M. W. Kellogg co. has appointed James M. Carry assistant to the president. For the past three years Carry had been assistant to the president of Pullman, Inc., the parent company.

A chemical consulting business has been started by **Joseph R. Mares** in Dickinson, Tex., specializing in petrochemicals and allied products. The former Monsanto Chemical co. vice president had served as general manager of the company's Texas div.

Appointment of Benjamin F. Lynip, Jr. as director of market research for **Monsanto Chemical co.'s** Merchandising div. has been announced by Roy L. Brandenburger, vice president and general manager of the division. He has been serving as director of planning and statistics for California and Hawaiin Sugar Refining co. of San Francisco.

The company has also named Thomas P. Tierney director of personnel relations for its Organic Chemicals div. and has elected W. W. Schneider to its Finance committee.

Major Gen. George Craig Stewart has been appointed general manager of the **National Safety Council,** a new post created to broaden top-level administration of the nonprofit accident prevention organization. He assumed his new duties in November after his retirement from the army became effective on Oct. 31.

Died: Dr. Charles I. Post, 56, vice president of **Nopco Chemical co.** on Oct. 10 at his home in Short Hills, N. J.

The Agricultural Chemicals div., **Pittsburgh Coke & Chemical co.,** has announced the promotion of W. T. McLaughlin to manager, special account sales. McLaughlin joined the company in 1948 as formulation plant manager of the Agricultural Chemicals div., and was subsequently promoted to division superintendent of all agricultural chemicals production. In his new position he will be located at the company's main office in Pittsburgh.

McLaughlin

Thomas M. Riley has been named advertising manager for **Pittsburgh Plate Glass co.'s** Paint and Brush div. He had been assistant advertising manager of the division.

Potash Co. of America has appointed Shelton Appleton sales representative for Texas, Louisiana, Mississippi and a portion of Arkansas. He will make his headquarters at 105 Preston St., Shreveport, La.

Matthew F. Keane has joined the sales staff of **The Raymond Bag co.,** and will be responsible for multiwall paper sack sales in Northern Ohio and Northwestern Pennsylvania.

Breckenridge K. Tremaine, formerly with DuPont co., has joined **Rhodia, Inc.** as technical director of its Industrial "Alamask" Reodorant div. Since April of this year he has been on loan to Rhodia as acting technical director.

Bradlee V. B. Postell recently was named assistant to Dr. Howard I. Cramer, vice president of development, **Sharples Chemicals Inc.,** subsidiary of Pennsylvania Salt Manufacturing co.

The newly-created post of assistant technical superintendent of **Shell Chemical corp.**'s Houston, Tex., plant will be filled by H. E. Hughes. In this position, Hughes will have charge of establishing a new Engineering Development dept. in the plant.

J. W. Hyde has been named chief engineer, the position formerly held by Hughes.

Heath Steele, head of **Southwest Potash corp.** since its inception, has resigned as president, and Thomas W. Childs has been elected to succeed him.

Spencer Chemical co. Promotion: Dr. A. J. Deutschman, Jr., from assistant director of research and development to director of chemical research. Dr. Deutschmann has been with Spencer since 1947.

At the same time the company announced that Dr. T. R. Hopkins has joined its Chemical Research dept. as group leader. Both he and Deutschman are located at the Jayhawk Works, Pittsburgh, Kans.

Transfer of Howard J. Miller, former assistant secretary of **Summers Fertilizer co.,** to the Kapco div. of Summers at McKeesport, Pa., has been announced by Summers president, J. E. Totman. Miller will be assistant to P. P. Rosette, divisional manager.

Kenneth L. Olson has been appointed a research engineer of **Swift & Co.'s** Plant Food div. research laboratory at Calumet City, Ind. He had been assistant superintendent for the division at Harvey, La.

Doyle

Union Bag & Paper corp. has named Leonard J. Doyle to the newly created position of vice president in charge of research. In directing this new department, Doyle will consolidate all of the company's market research, product development and packaging machinery research activities.

Ervin L. Peterson has been appointed Assistant Secretary of **USDA** by President Eisenhower. He succeeds J. Earl Coke who has resigned to return to his former position as director of the Agricultural Extension Service in California, from which he has been on leave since January, 1953. Peterson has been director of the Oregon State Department of Agriculture since 1943.

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Tennessee Corporation custom formulated mineral mixtures are tailored to fit *your* particular needs. We custom mix any combination of minerals to your own specifications. There is only one ingredient to add to your regular fertilizer formula to produce a **COMPLETELY BALANCED PLANT FOOD.** It requires no additional labor or mixing facilities. **TC** mineral mixtures come to your plant in bulk or bag already mixed in controlled amounts of soluble and readily available forms of Copper, Manganese, Zinc, Iron, Boron, and Magnesium. Cut down on multiple purchasing, raw material cost, and handling by mineralizing with a **TC** custom formulated mineral mixture.
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Recently appointed deputy administrator in charge of research of the Agricultural Research Service, **USDA,** is Dr. George W. Irving, Jr., who has been concerned with some of the initial work accomplished on plant growth regulators and radioisotopes.

New executive assistant to **USDA** Secretary Benson is Milan D. Smith of Pendleton, Ore. He succeeds Lorenzo N. Hoopes, who has returned to his position with Safeway Stores, Inc.

U. S. Steel has named Frank E. Adams a district sales representative for its Coal Chemical Sales div.

Dr. Lowell E. Netherton has been promoted to supervisor of inorganic research for **Victor Chemical Works** after four years as a research chemist in Victor's labs.

Virginia-Carolina Chemical corp. has transferred William D. Barton, Jr., former manager of its Shreveport, La.,

Barton

Campbell

sales office, to manager of its office at Montgomery, Ala., and promoted James R. Campbell to manager at Shreveport.

Election of Max A. Minnig as executive vice president of **Witco Chemical co.** has been announced. Other Witco personnel changes include appointment of Charles Gardner to sales manager, Drier div.; John H. Gifford, technical director, Carbon Black div.; Robert B. Sucher, assistant sales manager, Rubber Chemical Products Promotion and Leslie D.Carver, export technical sales manager.

Brunner

Horace C. Brunner has been named manager of the Chicago office of **Wyandotte Chemicals corp.'s** Michigan Alkali div. A Wyandotte employee since 1930, he was manager of Wyandotte's Detroit office for six years. In his new position he will be in charge of sales for one of the Michigan Alkali div.'s largest territories.

Company Briefs

The technical sales service staff of **American Chemical Paint co.** of Windsor, Ontario, has been reported reorganized and enlarged, with D. L. Miles as manager of the Windsor office and plant, assisted by J. Bryce.

New offices have been leased by **American Potash and Chemical corp.** at 99 Park Avenue, New York City, to serve as its national sales headquarters.

Plans have been completed for construction by **American Potash & Chemical corp.** of a plant for manufacture of lithium chemicals near San Antonio, Tex., company president, Peter Colefax, has announced. To be owned by a newly-formed company, American Lithium Chemicals, Inc., 50.1 per cent of whose stock is held by AP&C and the balance by Bikita Minerals, the plant will initially produce lithium hydroxide.

American Potash and Chemical corp. has completed acquisition of 216,936 shares, equivalent to 48.2 per cent, of the outstanding common capital stock of Western Electrochemical co., producer of sodium chlorate, as the result of an exchange offer.

A new Brazilian engineering and construction company has been established by the **Austin co.** To be known as Companhia Austin—Engenheiros e Constructores, it will have headquarters in Sao Paulo.

A. Baker, Jr.

A. Baker, Sr.

Bradley & Baker this year is celebrating its 30th anniversary. Beginning on Oct. 1, 1924 in New York the company now maintains branch offices in Baltimore, Jacksonville, St. Louis, Indianapolis, Norfolk, Houston and Atlanta with main offices at 155 E. 44th St., New York.

Berrien Products co. has added 27,000 square feet of floor space to its Nashville, Ga., plant. With the installation of new machinery, its production will be increased from 50 to 75 per cent, according to a recent report.

The largest ammonia plant of its type is being designed by **Blaw-Knox co.** for U. S. Steel corp.'s Geneva, Utah, installation. When placed in operation in 1956, the plant is to have an annual capacity of 70,000 tons of ammonia.

A U. S. investment group is reported seeking control of **Borax Consolidated, Ltd.,** London.

Net sales of **Chemical Enterprises, Inc.** and affiliates in the fiscal year ended June 30 amounted to $7,389,000, compared with $6,513,000 in the preceding fiscal year. Net profit after taxes was $224,000 compared with $177,000 in the 1953 fiscal year.

Crystalline ammonium nitrate fertilizer made by **Commercial Solvents corp.** is now available in 80 lb. as well as 100 lb. bags, the company's Agricultural Chemical Sales dept. recently announced.

Construction of a $500,000 fertilizer plant at Cedar Rapids, Ia., is reported planned by **Darling & co.**

Contract has been awarded to Leonard Construction co. by **Diamond Alkali co.** for rehabilitation and construction of certain additions to its Muscle Shoals Chlorine-Caustic Soda plant at Sheffield, Ala.

Plants of the Mixed Fertilizer div., **Davison Chemical co.,** have been grouped into three districts with managers reporting to W. N. Watmough, Jr., Davison vice president, at Baltimore. The following appointments have been announced:

B. C. Manker, Lansing, Mich., to Central district manager; John W. Ground, III, Joplin, to Western district manager; Joseph F. Stough, former International Minerals & Chemical corp. general sales manager, to Charleston, S. C., as Southeastern district manager; George Klein to Baltimore as general sales manager; W. P. Stansbury, Baltimore, to director of branch plant operations; Joseph E. Reynolds, Jr., from Joplin to Baltimore as operations manager and E. L. Carnell from superintendent, Savannah, Ga., to Baltimore as production planning supervisor.

In the Central district: John Detgen, Columbus, O., to assistant manager, responsible for sales in territories served by Alliance, Columbus and Findlay, O., plants; E. S. Jackson, Nashville assistant manager, to manager.

Western district: A. C. McCall from Columbus, O., to Joplin as manager for sales and operations at Joplin and Trenton, Mo. and Tulsa, Okla.

Southeastern district: U. S. Aaron from Savannah to Charleston as man-

ager for sales and operations at Charleston and Spartanburg, S. C. and sales at Savannah.

A regular quarterly dividend of 62½ cents per share has been declared by the board of directors of **Freeport Sulphur co.**, payable Dec. 1 to stockholders of record Nov. 15. This is the 112th consecutive quarterly payment on common stock of the company, Langbourne M. Williams, president, stated.

A reissue patent on its solutions of organic mercury compounds for use in agricultural sprays, slimicides and other products for agricultural and commercial use, has been granted **Gallowhur Chemical co.**

Stockholders of **W. R. Grace and co.** and Dewey and Almy Chemical co. have both approved the merger of the two companies, Grace recently announced.

In addressing a group of businessmen at Baltimore, J. Peter Grace explained how Grace's chemical enterprise will be organized. Grace headquarters for inorganic activities will be Baltimore; for organics, Boston. A new research laboratory is planned for Baltimore, as well as expansion of activities at Davison's Curtis Bay plant.

Full benefit of its Barton plant has not been felt in third quarter earnings, reported T.H. Barton, **Lion Oil co.** board chairman and T. M. Martin, president. This is because products manufactured there have, in large part, been placed in storage for sale in the fall and spring growing seasons.

A registration statement has been filed by **Mexican Gulf Sulphur co.** with the Securities and Exchange Commission for registration of 200,000 shares of its 10 cent par common stock to be offered for public sale through an underwriting group headed by Van Alstyne, Noel & co.

Michigan Chemical corp. reported net sales for the third quarter of $1,654,768 and profit before tax of $24,796, as compared with sales of $1,461,394 and profit before tax of $23,398 in the same period of 1953, giving a net loss a share of $0.10 in 1954 against $0.03 in the nine months of 1953.

In a report to the stockholders, President Theodore Marvin stated that the continued activity of the DDT market will bring some decline in sales volume from the third quarter total in the last three months of the year, but an amount in excess of 1953 fourth quarter figures is expected.

False advertising of insecticides "Cedar Wall" and Cedar Wall with DDT is prohibited by an order issued by FTC against Edward L. Millen, trading as **Edward L. Millen co.**

A fertilizer and liquid petroleum gas firm, **Mo-Kan Fertilizer & Gas co.**, has been incorporated at Wathena, Kan., with authorized capitalization of $50,000. R. F. Glick is resident agent.

Nitrogen, Inc. has been granted, at Clarksdale, Miss., charter of incorporation listing capital stock of $5,000.

A new division, Squibb Chemicals div., has been formed by **Olin Mathieson Chemical corp.** to develop and market antibiotics for agricultural and animal feed use and specialized chemicals. General manager is Fred J. Stock; Francis J. Reid, director of sales and Dr. W. E. Bunney, technical director.

Phillips Petroleum co.'s report to stockholders shows that fertilizer sales value increased 52 per cent in the nine months of 1954 over such sales in the same period last year.

Pittsburgh Plate Glass co. sales for the third quarter were $107,046,066, a decline of 6 per cent from sales of

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Presque Isle, Me.
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Also sales offices in Havana, Cuba, and San Juan, Puerto Rico

$114,335,137 reported for the third quarter of 1953. Net income, after provision for taxes, amounted to $10,621,890 or $1.14 per share. 1953 third quarter income was $9,944,647 or $1.09 per share. Harry B. Higgins, president, reported that sales of Columbia-Southern Chemical corp., a wholly owned subsidiary, have been constantly improving as the year progressed.

A sales office has been established in Chicago by **Ringwood Chemical corp.** at 120 South LaSalle St. The company has also added Robert Hyndman to its sales staff.

A price reduction of 20 cents per pound on technical grade aldrin has been announced by **Shell Chemical corp.** Prices now are 80 cents per pound, carloads, and 85 cents, less carloads.

The Houston, Tex., team still led **Smith-Douglass co.'s** safety league for the period Jan. 1 to Sept. 30, with Maint. & Misc., Streator in second place and Chem. Plt., Money Point, third. Houston has worked about 131,905 manhours without a lost time accident, and all teams have worked about 2,042,181 man hours with nine lost time accidents, making the overall accident frequency rate 4.41.

The 50th anniversary celebration of **Sylacauga Fertilizer co.** was held on Oct. 19, according to an announcement by Howard A. Parker, president.

An addition is reported planned by **Swift & co.** for its Atlanta, Ga., facility.

F. W. Tunnell & co. has announced the following appointments: F. Harold Tunnell, chairman of board; Donald S. Tunnell, president; Everett N. Angus, vice president; Richard E. Deal, secretary; Weston L. Stratford, treasurer and Thomas A. Marston, assistant secretary and assistant treasurer.

Virginia-Carolina Chemical corp. reported a net loss of $11,514 for the three months ended Sept. 30, compared with a net income of $230,922 for the same period of 1953. Increase of approximately $115,000 in tax amortization in excess of normal depreciation allowances because of recent additions to property accounts was said to be an important factor in the earnings reduction.

A second concentrator is to be added by **Western Phosphates, Inc.** to its phosphoric acid line at Garfield, Utah. Total triple superphosphate and ammonium phosphate capacity is expected to be doubled by the addition, scheduled for completion by Spring, 1955.

Associations & Meetings

Form Arkansas Plant Food Group

A NEW state plant food educational society, this one located in Arkansas, was formed on Oct. 22 at a fertilizer school held in Little Rock. Headed by Bill Dunklin, Planters' Fertilizer and Soybean co., Pine Bluff, the group will stress education, promotion and cooperation in relation to better use of plant foods.

Officers Elected

Other officers elected to head the group include R. M. Morehead, Olin Mathieson Chem. corp., vice president, and Lloyd Dhonau, Arkansas Plant Food co., secretary-treasurer. Directors include E. O. Baber, Chilean Nitrate Sales corp.; A. O. Haliman, Blytheville Fert. corp.; N. D. Morgan, American Potash Institute; Z. H. Calhoun, Southern Cotton Oil co.; R. L. Morgan, Arkansas-Missouri Plant Food co.; Morehead; Douglas Kelly, Jr., Lion Oil co.; Joe Wepfer, E. Dorado Fert. Works; H. T. Ray, Armour Fert. Works and Max Vaughn, Fort Smith Cotton Oil co.

Those attending the fertilizer conference heard Richard Maples, assistant agronomist in charge of soil testing, Marianna Lab, review results obtained in a series of experiments designed to throw more light on fertilizer needs of cotton in Arkansas.

Arkansas Fertilizer Needs

Nitrogen, Maples said, has given good yield increases on all major soil types when other required elements were supplied. In addition potash has brought increases, although some Delta soils still contain large amounts of this element and don't respond to any extent to additions of the material.

Phosphate does not increase yield to the extent of nitrogen or potash, he added, although rates up to 70 pounds P_2O_5 have shown profitable increases where tests show a need for the element.

Definite indications have been observed, Maples continued, where response of cotton to fertilizer was restricted by a lack of lime. Other significant results reported by Maples: No significant cotton response to date to trace and minor elements; results tend to confirm that fertilizer makes cotton mature earlier; fertilizer will help plants resist drought damage.

Floyd Bridger, Jr., Bridger Supply co., Jonesboro, cited some of the problems of the fertilizer dealer, suggesting that a slightly increased retail price with bigger dealer discount would stimulate more sales activity.

Other speakers at the Arkansas meeting included Dr. W. H. Garman, American Plant Food Council agronomist, and Dr. M. H. McVicar, agronomist for the National Fertilizer Association.

Southern Weed Conference

Plans are moving ahead rapidly for one of the largest conferences on weed control ever held in the south, announced Dr. Warren C. Shaw, president of the Southern Weed conference.

Sessions of the eighth annual meeting will be held at Hotel Soreno in St. Petersburg, Fla., on Jan. 17-19. Attending will be representatives from state experiment stations, USDA, extension services, the farm chemicals and farm equipment industries, vocational agriculture and the farming industry.

The conference president pointed out that arrangements have been made with the management of the Soreno hotel for special rates for persons attending the conference. Everyone is responsible for his own hotel reservations, and the conference should be mentioned in a request for room space.

Safety Award to MCA

The Manufacturing Chemists Association has been given a 1954 National Safety Council Association award. It was accepted by S. M. MacCutcheon, director of safety, Dow Chemical co., and chairman of the MCA General Safety committee.

Fertiliser Society Meets

The Fertiliser Society (of England) planned to meet at Immingham in November to tour the Fisons Limited plant for the manufacture of phosphoric acid and triple superphosphate.

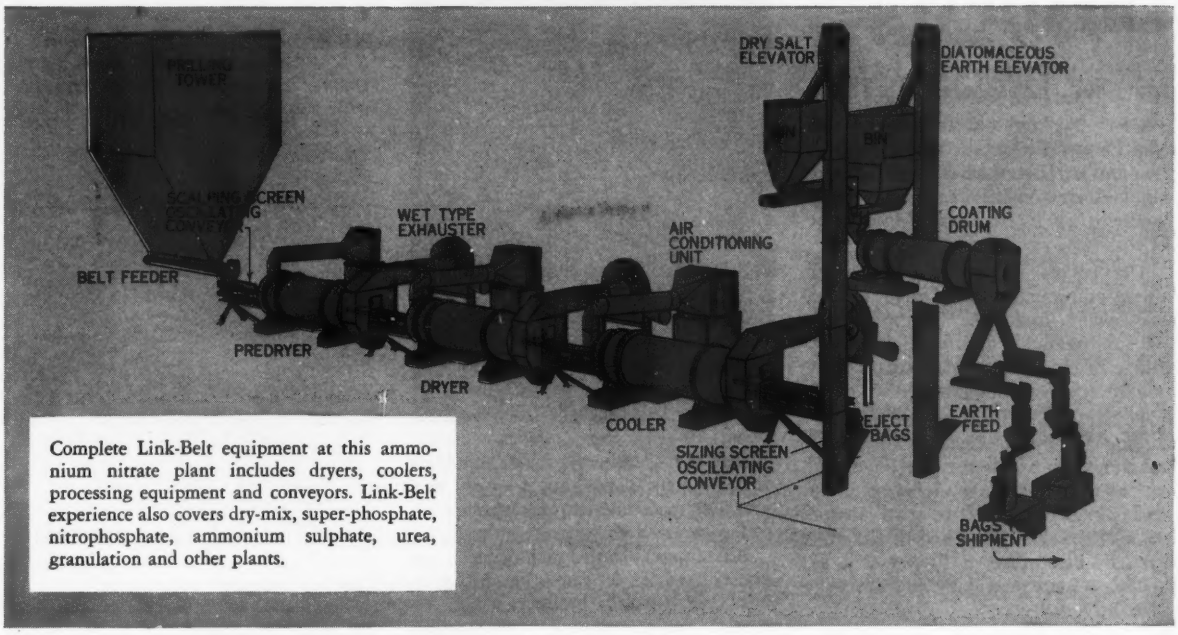
Lourie Heads FEI

Bruce Lourie, vice president in charge of sales for Deere & co., was elected president of the Farm Equipment Institute at its 61st annual convention in the Edgewater Beach hotel, Chicago, on Oct. 22.

The institute, composed of nearly 400 firms, elected Frank H. Hamlin to succeed Lourie as Executive committee chairman. Reelected vice presidents were T. B. Yale, International Harvester co. vice president, and R. C. Hudson, Hudson Manufacturing co. president. A. King McCord, Oliver corporation president, was elected a new member of the Executive committee.

Why Cooperative Farm Chemicals selected LINK-BELT

to completely equip its fertilizer plant



Complete Link-Belt equipment at this ammonium nitrate plant includes dryers, coolers, processing equipment and conveyors. Link-Belt experience also covers dry-mix, super-phosphate, nitrophosphate, ammonium sulphate, urea, granulation and other plants.

Improved methods and Link-Belt equipment assure better fertilizer at lower cost

From prilling towers to bagging machines, the commercial fertilizer plant of Cooperative Farm Chemicals Association at Lawrence, Kansas, is Link-Belt-equipped. This plant chose Link-Belt to gain the advantages of a single quality source for a broad line of materials handling, power transmission and processing machinery, which assures better fertilizer at lower cost.

What's more, Link-Belt offers a unique turn-key service on all types of commercial fertilizer processes. Under a single-contract, Link-Belt accepts complete responsibility for the design, manufacture and erection of entire plants.

For an analysis of your requirements, get in touch with the Link-Belt office near you. Or write today for your copy of Book 2459.

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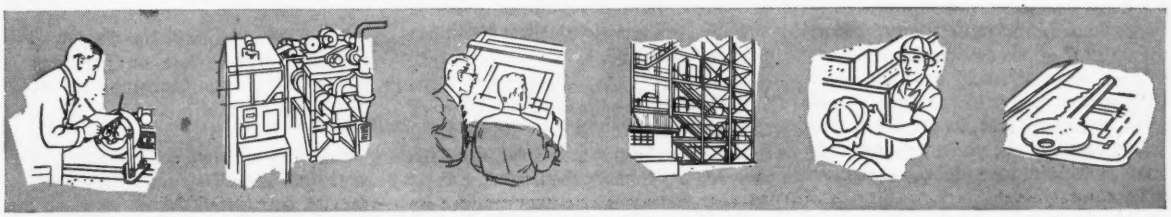
Here's what Link-Belt offers you under a single-contract responsibility



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PMMI 1955 Meetings

Two meetings have been scheduled by Packaging Machinery Manufacturers Institute for 1955, according to Tom Miller, institute president and vice president of Package Machinery co.

The semi-annual meeting will be held on April 16-17 at the Palmer house, Chicago, and the annual meeting on Sept. 15-18 at the Homestead, Hot Springs, Va.

CHEMICALS

New IMC Phosphates (RS 384)

Two new phosphate fertilizers, 0-50-0 Multi-Super Pellets for direct application and triple superphosphate for mixing and ammoniation, are now being produced by International Minerals & Chem. corp.

The pellets are a unique product aimed at providing the farmer with a free-flowing material. Composed of BB-sized granules, the material will not bridge or clog and is acid free so does not react with bag linings.

Tested under farm conditions, according to International, the material has shown up well under varying applications including use on deficient range land by airplane. Two other major selling points: Multi-Super retains full strength in storage; 8–10 per cent in freight storage and handling costs is saved.

The triple super runs approximately 46 per cent APA and is conditioned to prevent setting up in storage.

For a sample and prices of the material, circle 384 on Reader Service card.

New Ringwood Repellent

"Ringwood Repellent," a new rabbit repellent, will be commercially available this fall, according to a bulletin from the U. S. Fish and Wildlife Service, which developed the material in cooperation with Ringwood Chemical corp.

Containing trinitrobenzene-aniline complex as its active ingredient; the material has been reported very effective in extensive tests, and has been recommended for use on the following dormant deciduous plants: apple, ash, basswood, buckthorn, buffaloberry, cedar, cherry, crab apple, cranberry, dogwood, elm, euonymus, hackberry, hemlock, honeysuckle, holly, indigo bush, juneberry, lespediza, lilac, locust, magnolia, maple, olive, plum, poplar, prune, redbud, multiflora rose, tulip, viburnum and walnut.

The repellent may be applied by brush or sprayer.

Equipment & Supplies

Fluopacker Bag Packer (RS 385)

St. Regis Paper co. is offering a Fluopacker Filling Machine which utilizes a new concept in filling and weighing material in multiwall valve bags. Fluidization, as it is termed, provides an additional means of packing powdery and granular materials through application of low pressure air.

Advantages claimed include clean operation, weight accuracy, low maintenance cost, versatile production and potential bag-size saving. Production rates vary from one to 20 bags per minute on either single or multiple tube machines.

St. Regis acts as exclusive sales and service representatives for Food Machinery & Chem. corp., originator and producer of the unit. **For information circle 385 on Reader Service Card.**

Rapistan Bag Flattener (RS 386)

Rapids-Standard co. is now producing a power-driven bag flattener for use with multiwall sacks. The unit removes air and distributes bulk materials evenly in the bags so they are easier to handle and take less room in storage.

It consists of two roller-bed belt conveyors, one mounted above the other with surfaces facing. The top belt is spring loaded to provide proper pressure on sacks. Manufactured in three standard lengths and belt widths the flattener belts are powered with separate, totally enclosed motors. Full specifications and prices are available. **Circle 386 on Reader Service Card.**

Suppliers' News

Controls and Instrumentation Sales co. has been established at 1516 Summer St., Philadelphia, Pa. The company is a new sales agent for instrument manufacturers.

Hose Accessories co., manufacturer of Le-Hi hose couplings, valves and accessories, has announced appointment of Durrie Sales co. as its representative in Illinois, Indiana and Iowa. Durrie headquarters are at 605 West Washington St., Chicago 6, Ill.

St. Marys Kraft corp., subsidiary of Gilman Paper co., is now operating a new bleach plant at St. Marys, Ga. Gilman reports that for the first time in its 45 year history it can now produce its own bleached pulp and manufacture its own bleached papers.

St. Regis Paper co. income for the first nine months of 1954 was $11,456,784 or $2.01 a share, compared with $10,149,983 or $1.82 for the same period last year. Sales also were greater, $149,430,676, compared with $148,548,731 for the first nine months of 1953.

Appointment of General Machinery co., 1600 Second Avenue, South, Birmingham, Ala., as its sales representative in northern Alabama has been announced by Dwight-Lloyd, Inc., division of **Sintering Machinery corp.** General Machine will handle Dwight-Lloyd's complete line of Transportometer continuous weighing and feed regulating scales.

One first and two second places were won by **Union Bag and Paper corp.** for its corrugated boxes at a recent Fibre Box Association exhibit in Chicago.

For information on numbered items use the Reader Service card

Portable Air Stapler (RS 387)

Manufacturers who use cartons in packaging their materials may be interested in a new portable air stapler from the Container Stapling corp. Filled corrugated or fibre board cartons are stapled from the outside with this new model which is priced at $175.00 f.o.b. Herrin, Ill.

Air pressure at 50–60 psi is required and 19.5 cu. in. is used for each staple driven in. The unit weighs 9.5 pounds and is available with three different anvil sizes for varying penetration.

For additional information circle 387 on Reader Service Card.

Heavy Duty Steel Conduit

A heavy-duty rigid steel electrical conduit, Superduct, has been developed by National Electric Products corp. for use under severe corrosive atmospheres. It is first galvanized, then coated with a vinyl chloride copolymer, pigmented and plasticized enamel finish, inside and out so that the conduit withstands attacks of materials such as sulfuric acid.

Howe Weightograph (RS 388)

A self contained Weightograph, automatic weighing unit, has been introduced by the Howe Scale co. The machine features a projection type weight indicator with exact weight flashed on a large clear wide angle screen.

Other features include a positive drive with no lost motion or back-lash.

There is no rack and pinion and the unit is equipped with agate bearings and knife edge pivots for longer scale life. Models are available with gross capacities from 31 to 2,400 pounds.

For details and specifications circle 388 on Reader Service Card.

AL Bin-Dicator (RS 389)

The Bin-Dicator co. has released a new model bin level indicator which incorporates a built-in bull's eye signal light for use where an operator visible signal is required.

Designated the model AL Special Bin-Dicator, it comes completely assembled and ready for installation and is available with various diaphragm materials. **For more data circle 389 on Reader Service Card.**

Yale Warehouser (RS 390)

The RSAT-3 Warehouser is a Yale & Towne fork lift truck developed to permit operation in aisles as narrow as six feet. Extendable forms reach beyond the outrigger wheels to pick up and deposit loads.

It has a rated capacity of 2,500 pounds at 15 inch load center and 126 inch maximum fork lift. Good forward vision is permitted by a single lifting cylinder, and controls are so located that it requires only one hand to hoist, lower and drive leaving the operator's other hand free for steering. **Circle 390 on Reader Service Card for more data.**

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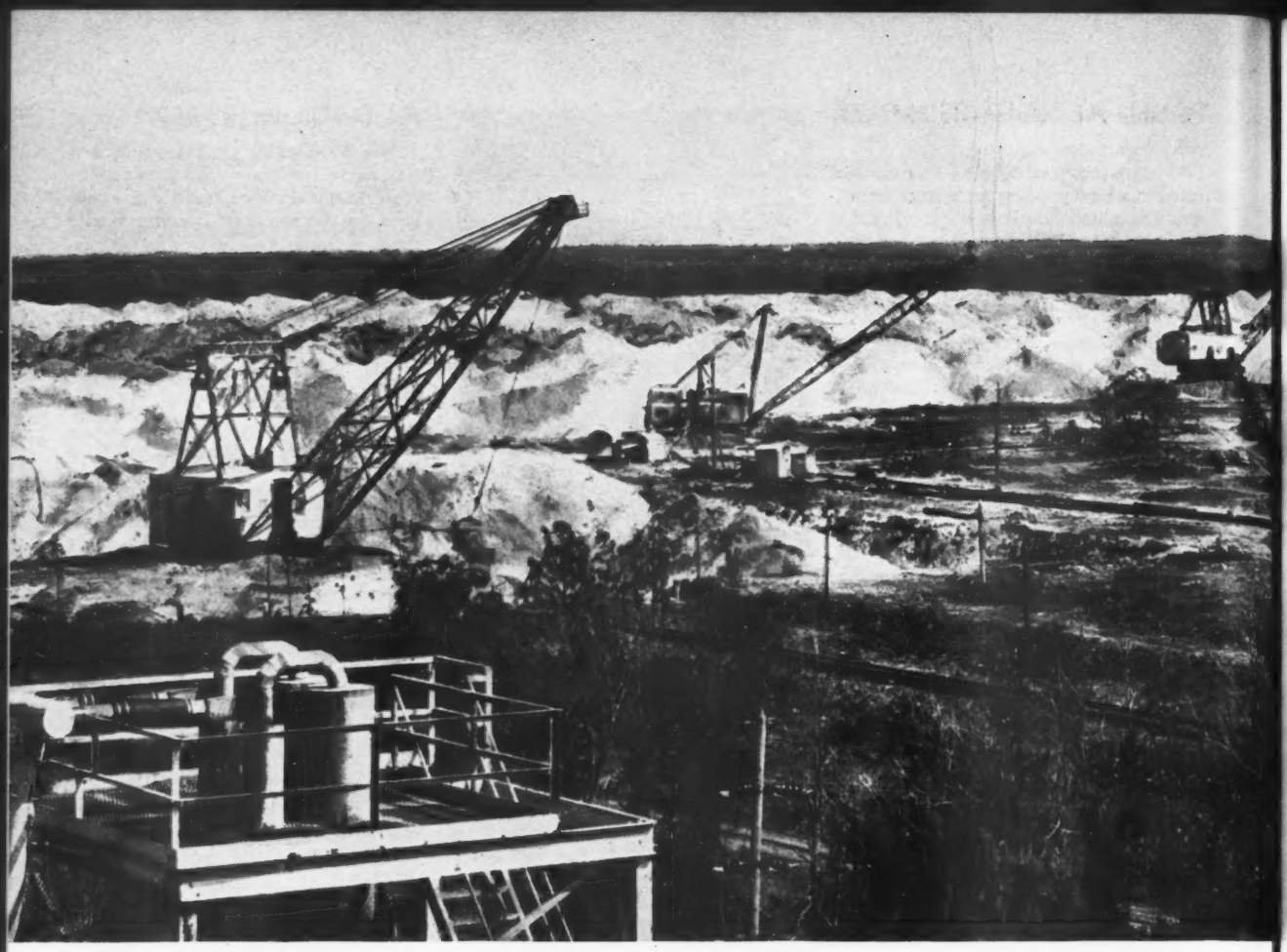

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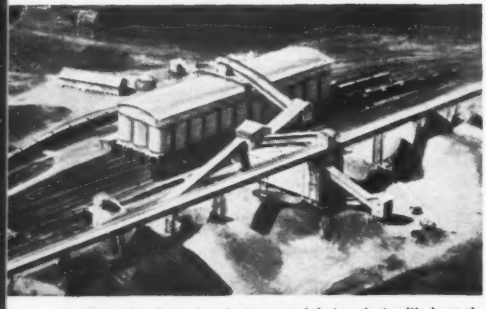
AA Quality...

for over 85 years a symbol of quality and reliability



From the air—wet rock storage and drying plant, with dry rock storage silos in background. These silos, 29 in number, have a total capacity of 40,000 tons of dried rock. Under the silos are four runways where 40 railroad cars can be loaded at a time.

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All grades of Florida Pebble Phosphate Rock
AA QUALITY Ground Phosphate Rock
All grades of Complete Fertilizers **Superphosphate**
Gelatin **Bone Products** **Salt Cake** **Ammonium Carbonate**
Sulphuric Acid **Fluosilicates** **Insecticides and Fungicides**
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30 FACTORIES AND SALES OFFICES, SERVING U.S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

Washington Report

By Fred Bailey & John Harms

Regulation of chemicals used in foods now is only about a year off. Following easy congressional approval of Miller amendments to the pesticide law, the outlook is for approval of chemical additive legislation in the 84th Congress convening Jan. 3. After additive legislation is passed, first tolerances on additives may be expected on a tentative basis some time next fall, according to information now at hand.

Bi-partisan congressional support is indicated for establishing positive measures for safety standards on additive chemicals. New York Democratic Rep. James J. Delaney, who headed up a 1951–52 House Select committee to investigate use of chemicals in production and processing of foods, plans to re-introduce a measure he sponsored last session (HR 2245)—with some modifications. Republican Rep. A. L. Miller of Nebraska also plans to offer a new version of HR 4901 next spring.

Further hearings may be held next spring by the old Delaney investigating subcommittee. New detailed hearings are expected to be demanded on grounds that since the last hearings additional chemicals have been introduced into the processing of food.

Delaney points out that testimony before the committee brought out that, as of 1952, of 704 chemicals used in foods some 430 were "known" to be unsafe. He believes that the number of insufficiently tested chemicals now may be even greater than two years ago.

The New York lawmaker, who becomes a stronger figure on chemical legislation in the new Congress by virtue of Democratic control, believes chemicals used in foods should be regulated in the same manner as drugs are regulated. New drugs must be proved safe before they can be moved interstate, but chemicals used in foods need not. Delaney says: "Dangerous food products may be removed from the market only after evidence establishes to the satisfaction of the court that such products may cause injury to users."

Industry reaction to Food & Drug Administration's proposed tolerances had not been fully registered by press time. No exceptions to tolerances had been filed. FDA expects exceptions would come right at the deadline for comments and exceptions, about Dec. 20. What comment there has been so far, officials say, indicates a "satisfactory" reflection of the facts brought out in the 1950 hearings.

Final tolerances may still be a minimum two or three months away—depending upon the amount of work needed by the agency to make corrections and supplying omissions called to its attention by the industry. Effective date of final standards could be expected to be almost immediately upon their announcement.

One of the main recommendations officially expected on tentative procedures under the law is for underwriting cost of changes.

Look for further reorganization of the Department of Agriculture. It's to be a realignment of field offices—now that the sprawling Washington offices have been streamlined.

Biggest headlines are to come from proposed changes in soil conservation and agricultural conservation payment programs (ACP). Two separate studies of

USDA field operations are expected to propose dismemberment of the Soil Conservation Service and turning over of its functions to the states. ACP administration also would be put in the hands of states. A Task Force of the Commission on Intergovernmental Relations makes these proposals. A study now being concluded by former Assistant Agriculture Secretary J. Earl Coke is expected to come up with the same recommendations.

While odds are against such moves being made immediately, primarily because of a hostile Congress, the proposals are significant as a barometer of Administration planning. Under the ACP change, the department would make grant-in-aid payments for permanent-type soil practices only. These would exclude lime and fertilizer applications. States which would want to make assistance payments to farmers for lime and fertilizer would be compelled to draw from their own treasuries—without Federal help. Thus, insiders believe, payments for such "temporary" practices could rapidly vanish.

Note: The Commission on Intergovernmental Relations is not the Hoover Commission. It is what was known as the "Manion Commission" before Ike fired Manion. The CIR is studying division of functions between the U. S. and state governments. Hoover is studying only operation of the Federal government.

Here's how the Agriculture department looks at the fertilizer situation for next year:

Farmers are expected to use a little more chemical fertilizer in terms of plant nutrients than they used this year. They used more in 1954 than ever before.

Prices of fertilizer are likely to remain unchanged, and supplies of all plant nutrients are expected to be adequate to meet anticipated demands.

More of the specialized equipment used in applying anhydrous ammonia will be available.

The department says that prices of fertilizer have increased about 8 per cent since 1950 and about 58 per cent since 1940. **But:** "These increases have been small compared with increases in most other prices. Prices of fertilizer currently are lower than they were in 1940 relative to other prices paid as well as to prices received. These changes in price relationships have been partly responsible for the nearly fourfold increase in consumption of fertilizer since 1940."

Pesticide prices are likely to show "no important changes" next year, according to the Agriculture department. Prices were mostly unchanged from 1953 to 1954. Manufacturers' prices of benzene hexachloride and DDT were slightly higher in September 1954 than a year earlier, USDA says, but prices of 2,4-D and lindane were slightly lower. Prices of such staples as lead arsenate, copper sulfate and sulfur remained unchanged.

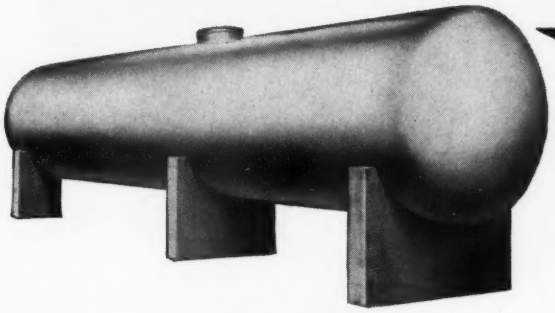
A total of about 260 million pounds of the major pesticides excluding ground sulfur, were used in 1954 compared with about 210 million pounds in 1953. USDA bases this on incomplete returns. From 60 to 80 million pounds of copper sulfate, 60 to 70 million pounds of DDT and 20 to 25 million pounds of 2,4-D are used each year. In addition, more than 25 million pounds of several established organic fungicides are used.

Agricultural producers are being encouraged by the USDA to "keep up-to-date" on development of new, effective pesticides. Official advice to farmers includes: Malathion and diazinon for dairy and cattlemen . . . "worth trying" for flies which show DDT resistance; Endrin for cotton, tobacco and truck crop growers . . . should be tested for specific insect problems; new urea and carbamate herbicides "are helping to answer the weed problem."

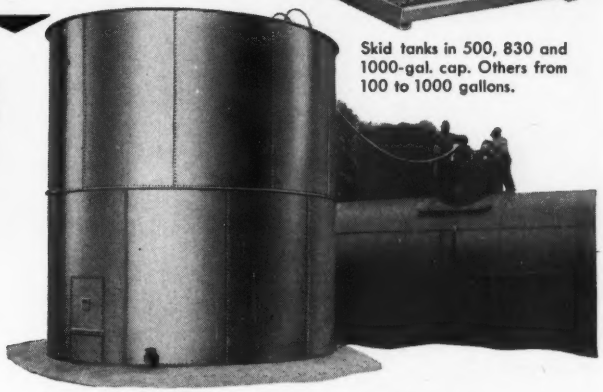
For farm storage...

Skid tanks in 500, 830 and 1000-gal. cap. Others from 100 to 1000 gallons.

For bulk storage....



Welded low-pressure tank for bulk storage. In 12,000 and 22,000-gallon capacities.



Bolted 22,000-gallon non-pressure tank for bulk storage.

Profit with BUTLER aluminum tanks for liquid nitrogen solutions

Cash in on the amazing upsurge in use of liquid nitrogen fertilizers. Butler now offers you two new types of special alloy non-corrosive aluminum bulk storage tanks for liquid nitrogen solutions.

One is a bolted vertical 22,000-gallon tank for non-pressure solutions. The welded tank—in 12,000 and 22,000-gallon capacities—is a horizontal bulk storage tank for low-pressure solutions, available to code specifications.

Smaller size horizontal aluminum tanks in 100, 270, 500, 830 and 1000-gallon capacities are also available. The 500, 830 and 1000-gallon tanks can be equipped with skids for on-farm storage or transporting solutions from bulk station to farm.

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Please send me full information on Butler aluminum Welded bulk tanks ☐
Bolted bulk tanks ☐ Small horizontal tanks ☐ Skid tanks ☐

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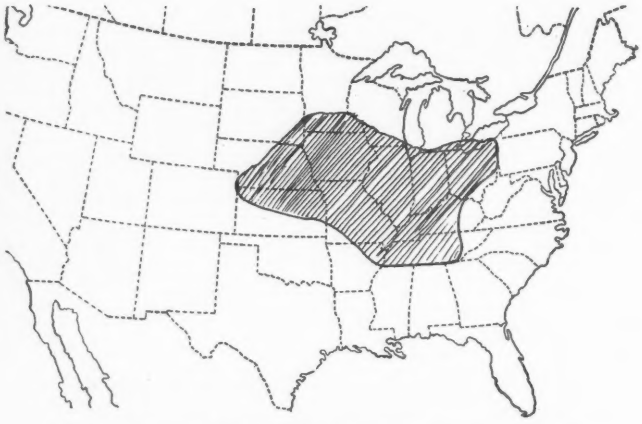
Heptachlor for Corn Belt

New Velsicol Deactivator Extends Applications, Control of Rootworm Seen Promising Market

Howard Waters, Danville, Ia., shows damage caused by corn rootworm compared to stalk grown on treated land.



Shading shows area of greatest density of corn rootworm.
PPC Br., ARS, U. S. Dept. Agr.

ONE of the largest, relatively untapped pesticide markets, the Midwestern corn belt, is being viewed with increasing interest by producers and formulators.

Another big step toward developing this market occurred a few weeks ago when Velsicol corporation announced development of a new anti-breakdown agent for use with heptachlor formulations. According to Velsicol's Dr. Roger Roth, agricultural chemicals sales manager, the material is a catalyst deactivator which will permit formulation of heptachlor with clay and kaolin diluents, a practice previously not practical due to their catalytic action on the toxicant.

Dr. Harold Gunderson, Iowa Extension entomologist, with Emil Gerdes, Geigy Agric'l. Chemicals, and Velsicol's technical representative, Dr. John Eastwood, at Waters' farm test plots.

'Deactivator H'

"Now named 'Deactivator H'," says John Kirk, vice president,

CHEMICO

Significant is the fact that CHEMICO's 1,000th project is a repeat order . . . the *third* order from the same client.

This project is a contact sulfuric acid plant for a Brazilian company which placed its first order with CHEMICO eighteen years ago.

Repeat orders mean satisfied customers . . . and the list of CHEMICO's 1,000 projects includes an impressive volume of such business. Whatever may be your needs for the manufacture of heavy chemicals, be sure to consult CHEMICO.

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CC276

Here's the difference in yields between untreated and heptachlor-treated fields. Uncorrected for moisture, they were approximately 68 bushels per untreated and 92 bushels per treated acre. Note the lodged, goose-necked corn behind the untreated container; straight, easy to harvest field is back of the treated corn.

"the material will extend use of heptachlor in several directions, one of the most promising of which seems to be in the cornbelt against the corn rootworm."

Although the damage caused by this pest is often overlooked, the goose-necked and root-lodged stalks are a constant exasperation to farmers operating mechanical pickers, and there is a definite loss in yield, as Midwestern researchers have discovered.

Some control of the pest can be obtained through use of a crop rotation system, but in areas where corn follows corn year after year, insecticide treatment becomes essential.

In estimating extent of the market, Kirk points out that in Iowa, Nebraska and Illinois alone there is a potential of 27.5 million acres of corn which may be in need of protection from the rootworm.

In the past, general formulating practice with heptachlor has been to absorb the toxicant on Celite, then cut back with calcium carbonate, a pyrophyllite or talc. Now, using the deactivator, it will be possible to utilize clays and kaolins, possibly reducing somewhat the cost of formulation and definitely aiding the formulator in consolidating his diluent inventories.

For control of the rootworm, the material can be formulated as a liquid and applied as recommended to the soil surface. An alternative method is using the material in a fertilizer-pesticide mixture for application with starter plant foods.

Formulators can supply fertilizer mixers with a liquid material for spraying the toxicant on a fertilizer mix, or a granular material can be prepared and mixed with the cured goods.

Application Rates

Used with a starter fertilizer, application rates currently recommended by most of the corn belt states call for 0.5 pounds actual heptachlor per acre when used in bands and one pound per acre when the material is broadcast. Some state recommendations call for more toxicant per acre, 0.75 and 1.5 pounds, respectively, where other soil insects besides rootworm are involved.

To show effectiveness of such treatments, Kirk and Roth point to the Iowa Experiment Station investigations conducted on the Howard Waters' farm at Danville, Iowa.

Where heptachlor was applied, the corn yield was approximately 92 bushels per acre as compared to only 68 bushels per acre from untreated check plots. These yields are uncorrected for moisture. With corn at approximately $1.50 per bushel, this additional 24 bushels indicates a return of $36 for an investment by the farmer estimated by Dr. Roth at a maximum of $3.00 per acre.

It looks big to the Velsicol officials who will be vying with Shell (aldrin and dieldrin) as well as BHC producers for top position in the field. It's almost a foregone conclusion that the industry can expect to see some new Midwestern formulating plants by the time spring planting rolls around, for some companies are all ready to jump in on the ground floor. ◆

Approve APFC-NFA Merger

From a New National Plant Food Institute

Results of NFA members vote on consolidation are announced at the association's Hollywood, Fla., meeting.

A NATIONAL Plant Food Institute has officially been formed. A favorable vote by American Plant Food Council members at a special meeting in Washington's Mayflower hotel on Dec. 1 was the final step that paved the way for merger of APFC with the National Fertilizer Association.

NFA's members voted on Nov. 11 at the association's annual southern convention in Hollywood, Fla. The new institute will become an entity on July 1, 1955.

Committee of Ten

A committee of 10 industry officials has developed details of the consolidation and will formulate the program to be presented to the new board of directors on July 1.

Members of the committee include: R. B. Douglass, Smith-Douglass co.; E. A. Geoghegan, Southern Cotton Oil co.; J. A. Howell, Virginia-Carolina Chem. corp.; J. A. Miller, Price Chem. co.; Edwin Pate, Dixie Guano co.; C. T. Prindeville, Swift & co.; P. J. Prosser, Baugh & co.; J. E. Sanford, Armour Fertilizer Works; J. E. Totman, Summers Fertilizer co. and Louis Ware, International Minerals & Chem. corp.

Formal negotiations began with the meeting of a joint committee in Washington on Oct. 4.

Board of Directors

The first board of directors of the National Plant Food Institute includes, for terms expiring in 1956:

R. E. Bennett, Farm Fertilizers; H. C. Fisher, Diamond Fertilizer co.; W. B. Hicks, Wilson & Toomer Fert. co.; J. A. Howell; B. H. Jones, Sunland Industries; R. L. King, Georgia Fert. co.; W. J. Murphy, American Potash & Chem. corp.; W. T. Steele, Jr., Coop. Fert. Service; J. E. Totman; Louis Ware; and M. S. Wright, Texas Farm Products co.

Directors with terms expiring in 1957 include: E. N. Carvel, Valliant Fert. co.; J. V. Collis, Federal Chem. co.; J. C. Crissey, Coop. GLF Soil Bldg. Service; J. H. Epting, Epting Distributing co.; R. L. Hockley, Olin Mathieson Chem. corp.; R. D. Martenet, E. Rauh & Sons Fert. co.; Edwin Pate; G. E. Petitt; Potash co. of America; Hugo Riemer, Nitrogen div.; J. E. Sanford; J. B. Snyder, Snyder Chem. co. and W. C. Stark, Atlantic Fert. corp.

Those with terms ending in 1958 are: J. F. Doetsch, Chilean Nitrate Sales corp.; G. W. Gage, Anderson Fert. co.; M. G. Geiger, Davison Chem. co.; E. O. Geoghegan; E. R. Jones, Apothecaries Hall co.; J. A. Miller; J. E. Powell, The Smith Agr. Chem. co.; C. T. Prindeville; P. J. Prosser; C. B. Robertson, Robertson Chem. corp.; M. C. Taylor, Oregon-Washington Fert. co. and F. J. Woods, Gulf Fert. co. ◆

Part of the NFA group is shown voting at its southern convention

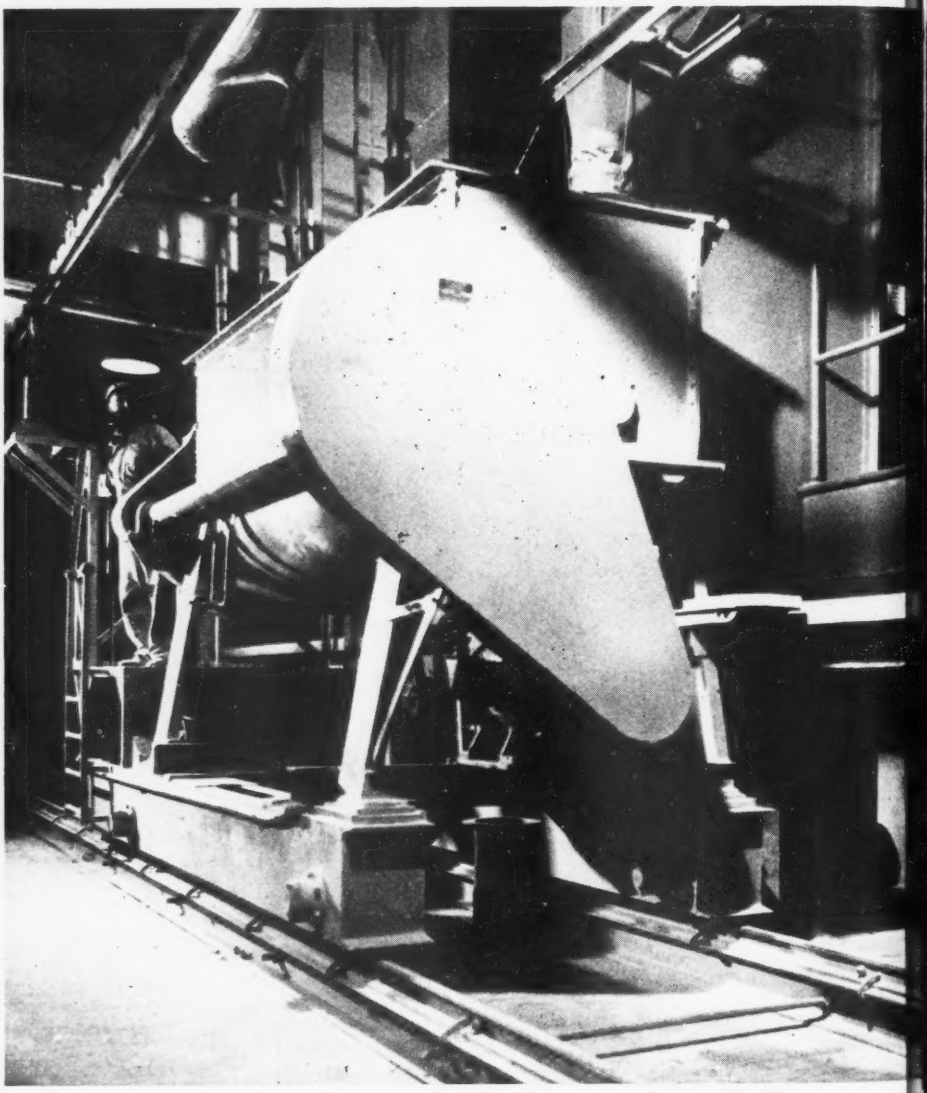
Canadian Farm Chemicals

Announcing

A new monthly publication

exclusively for the

Canadian Farm Chemicals Industry



Modern electrically powered trolley blender manufactured by Greey Mixing Equipment Ltd., and used by CIL in their Hamilton plant.

JANUARY 1955

VOLUME 1 NUMBER 1

The first magazine

for the *Canadian Farm Chemicals* industry

will begin publication January, 1955

This new monthly publication will go to the 2,000 key members of the Pesticide and Fertilizer industries of Canada which have made tremendous progress in recent years.

And there is every indication they will have an even more brilliant future!

Now that farm chemicals has become a major industry in Canada, there is an essential need for a Canadian Farm Chemicals magazine.

As the pioneer publication for the farm chemicals industry of the United States, FARM CHEMICALS is now going to perform the same valuable service for the farm chemicals industry of Canada . . . and thus afford complete coverage of the business side of this prosperous market for the first time.

Some facts about—

The Canadian Farm Chemicals Industry

The 1953 sales of Pesticides were valued at $17,686,899.00—an increase of 145% since 1947.

Rodenticides	$ 314,150.00
Agricultural Dusts and Sprays	6,291,721.00
Herbicides	5,699,566.00
Pesticides for livestock	1,586,810.00
Insecticides (industrial & household)	3,794,652.00

The above figures were compiled from reports of about 443 registrants (out of a total of 506) who are estimated to account for at least 95% of the total sales of pest control products in Canada.

According to recent National Fertilizer Association figures, Canada was the biggest customer of United States fertilizers and fertilizer materials during 1953. The dominion purchased $9.2 million worth of plant foods.

Upon request* FARM CHEMICALS *will send you a complete sales breakdown of all pesticides in pounds or imperial gallons and dollars...and/or a complete statistical report on fertilizers.

Merger Vote Tops NFA Meet

National Fertilizer Assn.'s Delbert Rucker; Pres. Russell Coleman and Vice Pres. W. R. Allstetter.

Bradfield & Wells Featured Speakers

BIG NEWS at the southern convention of the National Fertilizer Association was a 192 to 1 vote in favor of consolidation with the American Plant Food Council to form a new, nonprofit National Plant Food Institute. Nearly 600 NFA members gathered at the Hollywood Beach hotel, Hollywood, Fla., for the 28th annual southern gathering.

Dr. Russell Coleman, NFA president, told members that although there have been some advantages in having two trade associations, he has reached the conclusion that "the industry can best be served through one strong national organization." Subject to approval by APFC, the new group would come into being on July 1, 1955.

Principal Speakers

Principal speakers on the program were Oris V. Wells, administrator of the USDA Agricultural Marketing Service, and Dr. Richard Bradfield, head of Cornell University's Department of Agriculture.

Wells, outstanding agricultural economist, stated that average farm prices will remain at present levels for the next three or four years and pointed out that any increases in overall income on the farm would have to come from reductions in production and marketing costs and through an increase in volume of production and sales.

"For the highest type of agriculture," stated Dr. Bradfield, "it is not a question of organic or chemical fertilizers; both are essential and as inseparable as Siamese twins." On most soils, he added, the amounts of organic matter required for optimum yields cannot be produced without liberal use of chemical fertilizers, nor can most profitable returns be realized from the fertilizers without organic residues.

New Book, Films

President Coleman introduced to members the four newest NFA

Mrs. Gordon Cunningham; W. D. Barton, Tennessee corp.; Mrs. A. H. Sterne; Dr. J. K. Plummer, Tennessee corp.

Al Mooney, Canada Packers, Ltd.; J. G. Carroll and Bill Caspari, Jr., Davison Chemical co.; Roy Gurkin, Fulton Bag and Cotton Mills and B. C. Manker, Davison Chem. co.

promotional efforts: "The Care and Feeding of Garden Plants," a book for the home gardener; a TV short and two movies.

Developed in cooperation with the American Society for Horticultural Science, the book has been written by 16 of the country's leading authorities.

NFA Research and Education Pays

In his address Coleman pointed out that NFA's investment in research and education "is now paying handsome dividends." He reported that although farm prices last year were 21 per cent below 1951, plant food sales continued to increase.

"Such a decline in farm income would have been disastrous to fertilizer sales 10 or 15 years ago," he added. "Today our farmers have learned that fertilizers must be used for profitable farming regardless of whether farm prices are relatively high or low." NFA, stated Coleman, "takes some credit in changing the farmers' attitude towards fertilizer usage."

Emphasizing that industry public service through education must be stepped up, the NFA head stated his belief that it can best be accomplished through one trade association. "If you vote to establish the 'National Plant Food Institute'", he added, "I will do all in my power to help make it the finest trade association in this country."

Organic Farming

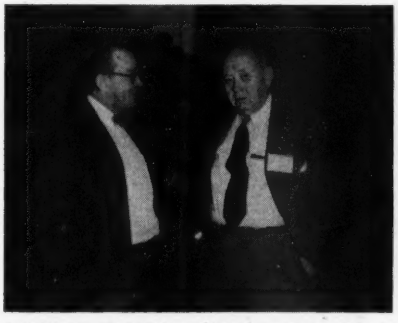
Speaking on "Organic Farming with Commercial Fertilizers," Dr. Bradfield reviewed the claims of organic faddists scientifically and from the standpoint of farm management and economics. Although properly made compost is a very good fertilizer, he said, losses of organic matter and nitrogen make it a somewhat wasteful practice. The best way to handle farm manure, he added, is to haul it directly from barn to field, plowing it under as soon as possible.

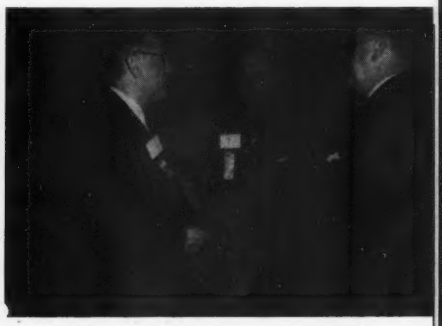
If the directions of organic "farmers" were followed, Bradfield continued, vast amounts of organic matter and an immense amount of labor would be required. In many areas, he pointed out, the produc-

LEFT: R. E. Bennett, Farm Fertilizers, Inc., talks with K. D. Jacob, USDA. RIGHT: R. E. Goodwin, Ashcraft-Wilkinson; John Sanders, Mississippi River Chemical co. and Mercer Rowe, Ashcraft-Wilkinson co.

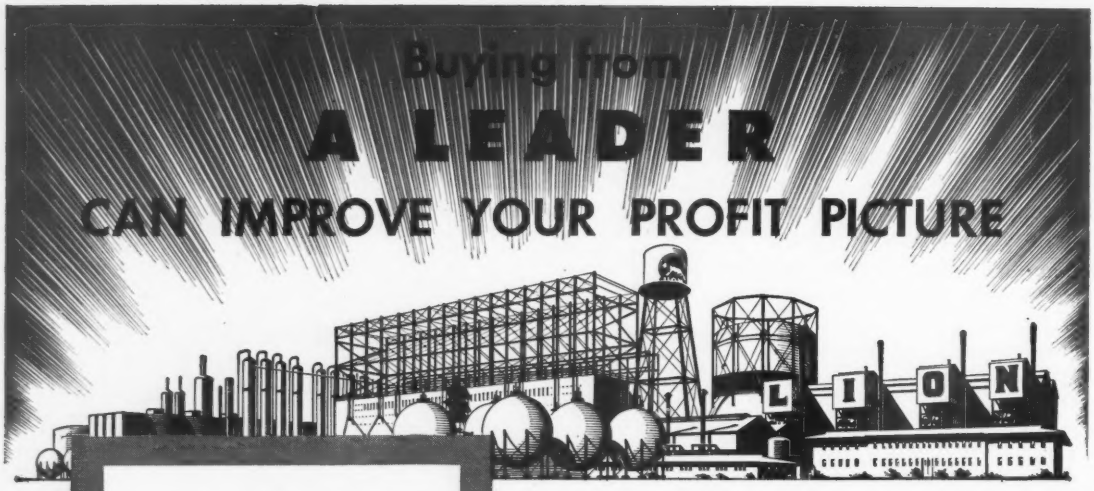
LEFT: Meade Wilson and Maurice Lockwood, International Min. & Chem. corp. RIGHT: C. G. Gran, Olin Mathieson Chem. corp.; John (Dugan) Taylor, Grand River Chem. div., Deere & co., and Joe Mullen, Olin Mathieson Chem. corp.

LEFT: B. S. Chronister, Allied Chemical & Dye corp., with Herman L. Breland, University of Florida. RIGHT: Mrs. J. H. Epting; H. B. Mann, American Potash Institute and J. H. Epting, Epting Distributing company.





LEFT: H. E. Melson, Melson Fert.; Dr. A. M. Smith, Olin Mathieson. RIGHT: Bob Engle, NFA; Paul Truitt, APFC pres. and Roy Camp, Chilean Nitrate co.



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Lion Anhydrous Ammonia — For formulation. A uniformly high-quality basic product. Nitrogen content, 82.2%.

Lion Aqua Ammonia—For formulation or acid oxidation. Ammonia content about 30%. Other grades to suit you.

Lion Ammonium Nitrate Fertilizer —For formulation or direct application. Improved spherical pellets. Guaranteed 33.5% nitrogen.

Lion Nitrogen Fertilizer Solutions —For formulation. Three types to suit varying weather and manufacturing conditions.

Lion Sulphate of Ammonia — For formulation or direct application. Uniform, free-flowing crystals. Guaranteed to contain a minimum of 21% nitrogen.

Because of Lion's leadership in nitrogen fertilizer production in the South, Lion can show you the way to MORE PROFITS.

When you buy your complete nitrogen requirements from Lion, you automatically put yourself in a position to improve your profit picture. Here's how:

1. **You Save Time** • You can contract at one time, with a single dependable source, for all of your nitrogen fertilizer material requirements. And, of course, time saved today is reflected in your profits tomorrow.

2. **You Prevent Manufacturing Delays** • Formulation material that does not have consistent quality can slow down or delay your own production needlessly. With Lion's Quality Control, you can be sure of *quality* materials. The difference will show up in your profit column.

3. **You Solve Problems Quicker** • If you run into a formulation snag, Lion's highly trained Technical Staff will be ready to give you the kind of technical assistance that can only come from a leader. This aid can help improve your profit picture... and *it's yours for the asking.*

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CHEMICAL SALES DIVISION — EL DORADO, ARKANSAS

tion of necessary quantities of organic matter would be impossible without chemical fertilizers.

At the other extreme, said Bradfield, is the "continuous cropper" who feels that, with plenty of fertilizer, his most profitable crop can be grown year after year without rotations or any semblance of diversified farming.

"The cheapest way to grow larger crops," the New York scientist added, "is by more liberal fertilization and by the use of good soil building rotations in which the soil is so handled that maximum efficiency is obtained from the fertilizers."

Actions of Organics in Soil

Bradfield reviewed the actions of organic materials in the soil stating that "much of our thinking about organic matter in the past has been rather vague and general. It is still regarded as an entity in much of our thinking.

"When we need to expand agricultural production to take care of our rapidly expanding population," Bradfield concluded, "organic farming with chemical fertilizers will make it feasible to expand our agriculture into areas of abandoned farm land and, when necessary, even into areas of very poor soil resources which have the other necessary conditions for a good crop production."

O. V. Wells reported that although farmers will economize on production expenses for 1955 crops, "we still expect a further increase in the use of commercial fertilizer, with supplies of phosphates for the coming season estimated at about the same and of nitrogen and potash some seven or eight per cent greater for the coming season than were available in 1953–54."

Two factors influencing possible future increases in fertilizer usage, according to Wells, are the practices aiding increased efficiency or lower farm costs and the fact that farm expenditures for fertilizer do tend to vary directly with cash receipts from year to year. However, he added, there is a long run trend toward increasing use of fertilizer.

Marketing Advances Reviewed

Wells reviewed briefly some of the advances made in the marketing of farm products and cited the efforts made by some farm groups, notably cotton producers and citrus growers. Dairy interests are developing a program at the present time, beef cattle producers are "taking a look at market development" and lamb and wool producers will endeavor to begin a similar program under provisions of the recent National Wool act, added Wells.

Presiding at the convention sessions was E. A. Geoghegan, vice president of the Southern Cotton Oil co. and NFA board chairman. Prior to the consolidation vote at the NFA business meeting he traced the negotiations which preceeded the consolidation proposal. Formal negotiations began Oct. 4 when a joint committee drew up a consolidation agreement which was approved by the NFA board on Oct. 19 and the APFC board on Oct. 28. ◆

ABOVE: C. D. Shallenberger, Shreveport Fertilizer Works; Mrs. and Mr. J. J. Devlin, Southwest Potash corp. and R. S. Mueller, R. S. Mueller co.

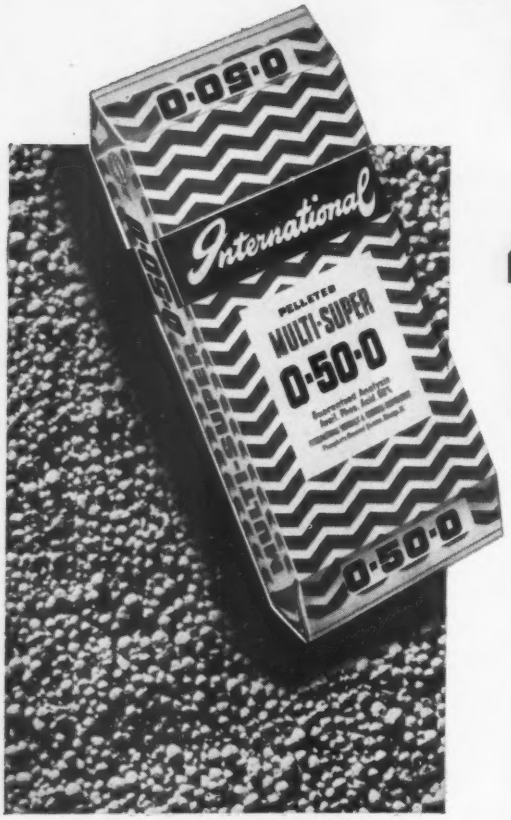
BELOW: M. Kolb and William J. Murphy, American Pot. & Chem. with W. W. Johnson, Stadler Fertilizer co.

ABOVE: Mr. and Mrs. C. E. Reger, Hector Supply co. get together with W. W. Johnson of Smith-Rowland co.

BELOW: Cecil Wadleigh, USDA; Bob Engle, NFA and Vincent Sauchelli, Davison Chemical co. meet to talk.

D. N. Hauseman, Davison; Tom S. L. Pope, Int. Fert. Ltd.; M. G. Geiger, Davison; V. B. Lillie, Canadian Industries and Bill Caspari, Jr., Davison.

Announcing two new, special-phosphate fertilizer

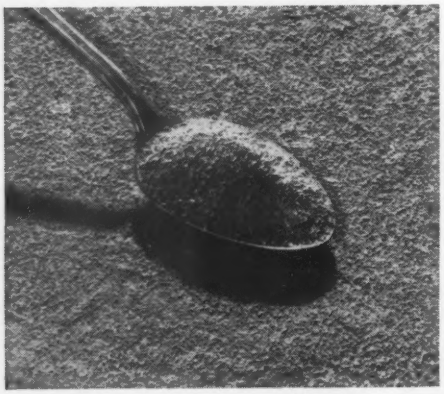


Multi-Super Pellets, shown actual size

1 For direct application
0-50-0 Multi-Super Pellets

Here's a unique high-potency, high-quality phosphate — "pelleted" to meet special on-the-farm needs today. New Multi-Super is free flowing. Its exclusive BB-sized granules won't bridge or clog spreading equipment. Multi-Super is acid free, too. Doesn't react with bag linings. Retains full strength in storage. Saves 8-10% in freight, storage and handling costs.

Already widely proven under actual farm conditions, Multi-Super is ideal wherever phosphorus deficiencies exist — for side dressing corn, for wheat, oat and rice fields and for applying on deficient range pastures by airplane. Multi-Super guarantees not less than 50% phosphoric acid — assures easier, faster spreading, plus greater crop yield power for every pound.



Fine texture eliminates grinding before mixing; ammoniates readily

2 For mixing and ammoniation
Triple Superphosphate

New Triple Superphosphate is an important fertilizer manufacturing product that saves both time and money. Its fine, "powdery" but dust-free texture eliminates the need to grind before mixing; assures faster and more complete ammoniation. Triple Superphosphate runs approximately 46% A.P.A. Proper conditioning prevents setting up in shipment.

International's extensive plant expansion assures adequate production facilities for both of these new fertilizer products, now available for immediate delivery to you. Write or wire now for samples and quotations.

INTERNATIONAL MINERALS

Phosphate Chemicals Division

purpose products

Simple test shows superior ***FREE FLOWING*** *qualities of new Multi-Super Phosphate. Note freedom from bridging and clogging.*

& CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

Dieldrin for Malaria Control

Philippine Project Now Includes Shell Insecticide Product

THE Philippine government, assisted by the World Health Organization and the US Foreign Operations Administration, has expanded its malaria pilot project to include field trials of Shell Chemical's dieldrin.

The original experiment was begun in 1952 to determine whether or not DDT was an efficient and economical method of controlling malaria. Results of the work have formed the basis of a nation-wide malaria control campaign.

The current trials were organized by the WHO entomologist working on the project, Prof. T. L. Chang of China. Responsibility now belongs to the Philippines, with Dr. Gerardo Adan in charge.

LEFT: Dr. Gerrardo Adan, responsible for the project since July, '54.

BELOW LEFT: Household goods are piled up outside nipa (palm leaf) hut as inhabitants of barrio (village) prepare for dieldrin spraying.

BELOW: Workers are shown filling sprayers in preparation for the job.

Dieldrin has been reported more potent and persistent than DDT and, in one area where it was sprayed at 25 mg. per square foot, it is anticipated that protection will result equivalent to DDT at 200 mg. for the same area.

One of the objectives of the experiment is to determine if a single application at 50 mg. is sufficient to protect inhabitants from malaria for two years. Favorable results could result in considerable savings of labor, time and materials.

Northern Luzon, northernmost portion of the Philippines, was selected for the dieldrin trials. It provides an area enclosed by natural boundaries with the sea on the north, east and west and mountains to the south.

In this area of rich valleys, waterfalls and groves of betelnut palms over 5,000 houses are being sprayed to provide protection for nearly 25,000 people. An area with similar characteristics has been left unsprayed as a control and gets regular observation.

The tests, first in the Western Pacific region, will undoubtedly be of considerably importance to antimalarial work in many areas.

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Your Investment in Progress*

*** From a talk, "NAC Membership—Your Investment in Progress," delivered at the 21st annual meeting of the National Agricultural Chemicals Association on September 8, 1954, by retiring NAC president, Paul Mayfield, general manager, Naval Stores dept., Hercules Powder Co.**

YOU have in this association an industry membership that represents about $300 million sales a year—which is rather small, compared to the entire American economy. Yet the products we make and sell protect the economy of our national agriculture. They have a direct effect upon public health, including the processing and packaging of food.

When you look at it this way, your responsibility to the people of this country, and the stake you have in this business, is far out of proportion to your dollar sales.

This enormous share in the well-being and economic structure of our country will be reflected, in the years immediately ahead, by stepped-up research for better, safe and economical agricultural chemicals. . . . Millions are being expended for research in agriculture and millions more will be made available, so long as there is a reasonable profit to be made in current-day operations and from which the funds for research can be plowed back.

If we, as members of this industry, do not supply the research to carry this whole industry forward, you can be certain that someone else will do it for you—and send you the bill. It is as simple as that. I urge you, don't let it go by default.

Future Prospects

There's a great future in this field . . . so I'd like to report to you on the opinions of five top scientists to whom Lea Hitchner sent a questionnaire recently. He asked each of them about the present status and future possibilities of pesticides.

Dr. Stanley B. Freeborn, provost of the University of California, wrote as follows: "I think one of our great problems is to be found in the chemical control of brush as that is our last frontier. Chemical control, when it is effective, is one of the cheapest and easiest methods of handling the problem with safety."

Others contacted included Dr. Charles E. Palm of Cornell, Dr. George C. Decker, Illinois and Willard M. Fifield of the University of Florida. It was remarkable how the remarks tended to parallel each other in judging the uses for pesticides, as to what could be done to expand the uses of pesticides, and a long-range viewpoint on potentials.

Comments By Dr. Shaw

The fifth man who was asked for comments was Dr. Byron T. Shaw, who is the administrator, Agricultural Research Service, USDA. . . .

(*Ed. note: Dr. Shaw's reply was played to the NAC audience through a tape transcription. Here is his statement in part:*)

• The opportunities I see for pesticides are—as you'd expect—tied in with research. Some of these potentials can be achieved with only a little additional study. Others will probably take intensive and full scale research. Here's my list:

1. Farmers need effective controls for destructive pests that infest the soil.

We've become more aware of the losses caused by soil borne organisms in the past five years. Tests with some of the new organics have reduced infestations and brought striking increases in yields. But we need to learn more about the effects of these chemicals on crops and soil—whether they accumulate in the soils or in the plants—what hazards, if any, they hold for human beings and livestock.

2. We need new materials and techniques for the control of range and grassland insects.

3. Farmers . . . want chemicals that are specific for certain weeds. They would also like combinations of herbicides that will free a crop of a number of important weeds during the growing season.

4. Cotton growers across the Belt would like a chemical that holds back regrowth after defoliation or descication. In the pink boll-worm area this would enable growers to harvest late cotton.

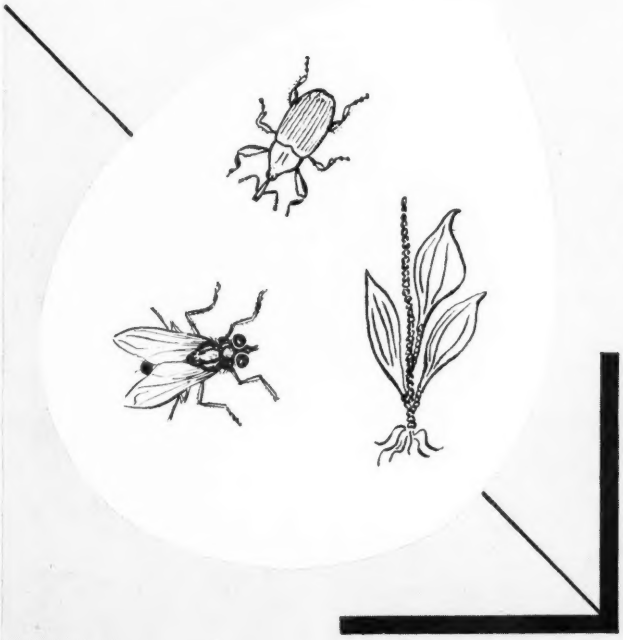
5. Farmers want more combinations of pest control materials. They save labor when they can apply a number of materials in one treatment.

In my opinion, the surest way to increase the use of pesticides is: first, to *keep building our fund of knowledge* of the nature of crop pests, the techniques that control them and the "dollar-and-cents" value of using these techniques and then to *keep growers continually* informed of our findings.

Mayfield: . . . after that comprehensive and inspiring statement, there can be no room for pessimism on pesticides. . . . ◆

think **first** of **DIAMOND**

for
insecticides
weed killers
brush killers



DIAMOND'S facilities for manufacturing and distributing agricultural chemicals for weed control, brush control and insect control assure formulator of pesticides a *dependable* source of supply for these important materials.

DIAMOND ALKALI COMPANY, long associated with high quality chemicals, is one of the world's largest manufacturers of basic herbicides and insecticides. The name DIAMOND itself is your automatic assurance of the best the market has to offer. Write for literature — and use our technical consulting service for your special problem. Your inquiries are welcome.

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DDT	100% Technical
LINDANE	99% Gamma Isomer of BHC
BHC	90% Technical
BHC	36% Technical
2,4-D and 2,4,5-T	Weed & Brush Killers Isopropyl Esters Butyl Esters Butoxy Ethoxy Propanol Esters (low volatile type)
K-101	Acaricide
HEXACHLORO-BENZENE	Seed Disinfectant

DIAMOND ALKALI COMPANY

Organic Chemicals Division

Cleveland 14, Ohio

Plants: Newark, N. J. and Houston, Texas

DIAMOND ALKALI CHEMICALS

Mayfield, Rollins, Dean Address WACA Meeting

DELEGATES to the annual convention of the Western Agricultural Chemicals Association held at Berkeley, Calif., on Oct. 12, heard Paul Mayfield of Hercules Powder co. and a past president of NAC Association declare that the work being accomplished by WACA represents a task that individual chemical companies could not do alone.

Mayfield stressed the importance of reaching the public with more accurate information about the chemical industry adding that the public must have facts and that the industry must have a strong association to produce information in all controversial cases regarding pesticides.

The Hercules official stated his belief that the Western organization and the NAC can, together, accomplish much because of experience in legislation and legal matters.

Quoting from a letter by Lea S. Hitchner, NAC executive secretary, Mayfield listed as the most important work facing the two organizations: legislative work, work on statistical information, product liability, technical progress and information, traffic, new work with reference to actions such as the Miller bill and public relations.

In connection with legislative activities Hitchner reported the probability of introduction of some 300 bills affecting pesticides during 1955. About 50 of these, he added, will require personal attention and 20 will require work at the Washington office.

Labeling Discussed

R. T. Rollins, assistant chief, California Bureau of Chemistry, discussed label changes and clearance with reference to California and stressed the organic phosphates and their use.

He pointed out the necessity for careful regulation and use of these materials and the necessity for educating users to proper cautions stressing an education program, label coverage and registration and permits.

FBR Activities

Activities of the Federal Bureau of Registrations were discussed by D. W. Dean, western representative of the Pesticide Regulations Section, USDA. Mentioning that some 21,000 different labels are covered each year by the Federal office, he stated that proper labeling and correlation of uses has been one of the most noteworthy accomplishments of the bureau during the past few years.

Dean pointed out that in 1953, 1,800 samples were checked by Federal agencies and that, of these, 70 per cent were found adequate, 12 per cent required notices to manufacturers on violations of

NACA past presidents Paul Mayfield and A. W. Mohr at WACA meeting.

R. T. Rollins discusses label changes. Seated at the tables are D. W. Dean, Stanley Strew, Paul Mayfield, Charles Barnard and Charles E. Cody.

some aspect of the Federal law, 9 per cent were covered by formal clearances by letter and 9 per cent were sent back for resampling or retesting.

Shipments Seized

During the year some 60 shipments were seized, and 44 of these were carried to the Adjustors' department for processing. Dean commented that none of these incidents occurred on the West Coast.

Strew Speaks; Panel

Stanley Strew, Chipman Chemical co., president of WACA, also addressed the group, and a panel discussion on the credit situation in the pesticide business was conducted by H. S. Dodge, Niagara Chemical co.; Roger Hunt, Stauffer Chemical co.; Steve Doyle, Pacific Guano co.; John Alexander, Monsanto Chemical co. and the panel moderator, Charles E. Cody, California Spray-Chemical corp.

Officers elected for 1955 included Strew, re-elected president; Converse York, Shell Chemical corp., vice president and Charles Barnard, formerly with American Cyanamid co., secretary. ◆

FTC Establishes

Soil Conditioner Trade Practices

TRADE practice rules for the soil conditioner industry have been established by the Federal Trade Commission as a result of the general industry conference held in Washington. A public hearing of the proposed rules draft took place in New York City where interested parties had an opportunity to present suggestions and objections.

Definition

Under the rules a chemical soil conditioner is defined as "any synthetic organic chemical substance, or chemically modified natural substance, which is represented as having a primary function of forming and/or stabilizing soil aggregates in soil to which it has been applied and thereby improving the resistance of such soil to the slaking action of water, increasing its water and air permeability, improving the resistance of its surface to crusting, improving its ease of cultivation and/or otherwise favorably modifying its structural or physical properties."

Present commercial products within this definition have, as active ingredients, materials of the following groups: polyelectrolytes such as polyvinyls and polyacrylics, and cellulose derivatives, and lignin derivatives which can be described as: "synthetic acidic or basic organic chemical substances and salts thereof; any synthetic organic substance which on contact with the soil generates a synthetic acidic or basic organic chemical substance or salt thereof; acidic or basic non-nitrogenous naturally-occurring products and salts thereof and acidic or basic non-nitrogenous chemically modified naturally-occurring products and salts thereof."

Eleven rules cover various unfair trade practices, the first two referring particularly to misleading claims, guarantees and other malpractices that have afflicted some portions of this industry in the past.

Misrepresentation

Rule 1 covers misrepresentation and deception in the sale of industrial products and lists these points. It is an unfair trade practice to represent or imply with or without accompanying qualifications that a product:

Will effect a beneficial crop response in each and every type and kind of soil—

Is a substitute, in any significant degree, for nutrient material—

Is a complete substitute for added natural organic matter, except in its potential to form and/or stabilize soil aggregates—

Will effect an appreciable modification of the texture (i.e., sand-silt-clay ratio) of any soil—

Will permanently exert a conditioning effect upon a treated soil.

A second portion of this first rule states that it is an unfair trade practice to represent or imply that:

A particular quantity will effectively treat any specified area of soil without clear disclosure of the depth to which the area will be effectively benefited—

A product will effectively form and/or stabilize soil aggregates when maximum benefit is dependent upon soil preparation for application or adequate mixing of product with soil without clear disclosure of all relevant information regarding the preparation or mixing—

A product combined with a plant nutrient will exert a beneficial soil conditioning or fertilizing effect without clear disclosure, in conjunction with this representation, of the area and depth of soil which will be effectively conditioned and the percentage of weight of the entire mixture represented by each plant food constituent present—

Except to the extent that surface crusting is reduced, erosion in some degree controlled and emergence of germinating plants facilitated, surface application on uncultivated or untilled soil by dusting or sprinkling of a product is sufficient to "condition" the soil.

Other rules promulgated by the FTC concern guarantees and warranties, fictitious price lists, substitution of products, defamation of competitors or false disparagement of their products, imitation of trade marks, misrepresentation of character of business, procurement of competitors' confidential information, selling below cost, various forms of discrimination and other trade restraint forms. ◆

Antibiotic Research Continues; Upjohn Markets New Formulation

ALTHOUGH most publicity to date on the crop pest use of antibiotics has concerned streptomycin and streptomycin-Terramycin, other forms are finding commercial application, notably Actidione from the Upjohn company.

Effective in control of leaf spot on cherry trees, this material, the Upjohn brand name for cycloheximide, is now being marketed for use as a turf fungicide under the trade name Acti-dione Ferrated. Promising as an agricultural fungicide, the new material has shown effective control of dollar spot, brown batch, snow mold and the melting-out (Helminthosporium) disease.

Credit for discovery belongs to Dr. Alma, Whiffen, Upjohn researcher who uncovered the antibiotic while searching for a product effective against fungi resposible for human disease.

The package now being marketed consists of a nine gram vial of Acti-dione and an eight ounce bottle of ferrous sulfate, capable of treating three average greens (15,000 square feet). The antibiotic is added to the ferrous sulfate and the resulting mixture placed in water through vigorous stirring. The solution is sprayed in the grass within one day of preparation and is not watered in.

For snow mold control, dilution is reduced so that only half as much turf, 7,500 square feet, is treated and one application is made prior to the first snow in late fall.

Upjohn recommends that the material not be mixed with other pesticides or with fertilizers until compatibility tests are completed. It is known that Acti-dione is rapidly destroyed in the presence of materials giving alkaline solutions, a situation that inhibits combinations with other fungicides.

Promising Applications

Other promising applications, in addition to cherry leaf spot control, include use for cucumber scab at 5–10 ppm and at 3 ppm for mildew on roses. An added feature of the latter application is the complete lack of visible residue.

Investigations are underway in the use of crystalline Acti-dione as a seed treatment for ornamental plant seeds and protection comparable to present commercial materials has resulted from a five minute soak in 50 ppm solution. For covered smut of wheat the material can be used as a dust of 0.5 per cent or less and a one hour soak in 0.002 and 0.004 per cent concentrations has proved effective.

Concentrations between 10 and 100 ppm are suggested for future tests in controlling cedar apple rust for teliospore germination has been

Dimond Address on Fungicide Advances

DR. A. E. DIMOND, chief, Department of Plant Pathology and Botany of the Connecticut Agricultural Experiment Station, addressed the Jubilee conference of the Association of Applied Biologists held this year in London.

Speaking on the subject "Fifty Years of Fungicides," Dr. Dimond suggested that one of the most outstanding problems involving protective fungicides likely to occur is the development of resistant strains of fungi.

He suggested that it would be well to determine whether or not too small a proportion of the "inoculum in a given site is exposed to a fungicide at one time to increase appreciably the odds for development of resistance." Related problems, added Dimond, are posed by the high costs of developing new fungicides and testing potential materials.

To diminish the possibility of the development of resistant fungi, Dimond suggested three courses:

- Look for fungicides with multiple toxic mechanisms for each pathogen for which they are used.
- Use two fungicides, each with different toxic mechanisms and applied in combination.
- Apply materials to resistant varieties of the host.

Dimond also took note of the strides made in developing controls for wilt diseases for which protective fungicides are ineffective. He cited the use of antibiotics and synthetic plant chemotherapeutants in controlling such diseases and stated that control of fireblight on apple and pear and of vegetable bacterial diseases "appears assured in the next few years." ◆

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completely inhibited at the maximum figure while the lesser amount was shown inadequate.

Marketed as Acti-Spray

Acti-dione has already been placed on the market in soluble tablet form as Actispray, marketed exclusively through Niagara Chemical division of Food Machinery & Chem. corp. Each tablet forms a 1 ppm solution in 100 gallons of water. Good compatibility is claimed with lead arsenate, 14 per cent nicotine wettable powder, 50 per cent DDT wettable powder, 25 per cent Malathion wettable powder, Triton B-1956 and Dreft. Tests show combinations with 50 per cent methoxychlor wettable powder, 15 per cent parathion wettable powder and sulfur to be "fair," and Upjohn suggests applications within a few hours after mixing. Poor results were obtained in tests involving chlordane and calcium arsenate.

Recommendations for use of Actispray include use on bearing trees as a 2 ppm post-harvest spray only; however, application to non-bearing trees can be made at any time, if required. Slight injury to tender foliage of sweet cherry trees can occur from sprays applied too early in the spring, before most of the leaves are well formed.

Other Reports

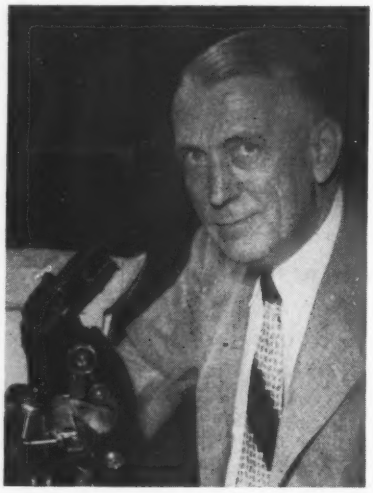
Other reports on successful crop use of antibiotics continue to be released and include experiments carried out in all sections of the country. Interest during the past year centered on Spring Lake, N. J., and the NAC convention where FDA's W. R. Jester and John C. Dunegan of USDA's Beltsville station discussed the agricultural uses of antibiotics. (Reviewed in post convention coverage in the October FARM CHEMICALS.

Prior to the NAC meeting, Dunegan addressed the American Phytopathological Society at Estes Park, Colo., and reviewed large-scale tests in which a Terramycin-streptomycin mixture virtually eliminated fire blight from commercial orchards. Mentioning one specific application, he stated that some 600 Bartlett pear trees were set aside in a 400 acre California orchard and half were treated with the mixture (termed Agri-mycin) and the other half with a water spray. In one untreated section, 268 cases of infection were found; however, only five infections were uncovered in treated plants in the same test plot.

Dunegan pointed out that Terramycin is included in the pest control material as a precaution against the possibility of bacteria developing a resistance to streptomycin alone.

He added that the skin russeting of pears which results from the usual copper sprays did not occur on antibiotic treated fruit.

Four other scientists reported to the convention on their work with crop use of antibiotics and gave conclusions supporting those of Dunegan. Included were H. F. Winter and H. C. Young, Ohio



USDA's John C. Dunegan reports on large-scale use of Terramycin-streptomycin mixture on fireblight.

Experiment Station; P. A. Ark, University of California and R. S. Kirby, Pennsylvania State University.

The first two found streptomycin the most effective antibiotic for treatment of apples and pears while Ark's work paralleled that of Dunegan. Kirby has used Agrimycin for the protection of Pennsylvania apple trees.

Dunegan and his associates, J. R. Kienholz, R. A. Wilson and W. T. Morris also said that a streptomycin liquid concentrate applied with a speed sprayer had proved effective on fire blight control.

Reviewing their activity, he pointed out that exploratory work was undertaken at Beltsville, Md., in 1952 to assure that streptomycin was non-poisonous to pear leaves and small scale field tests followed in 1953 in California and Oregon. These showed that fire blight incidence was reduced, that fruit was not russeted and that only mild yellowing or blanching of some leaves resulted from application of the antibiotic as a spray.

The 1954 tests showed that control obtained with five or seven applications of the mixture (30 parts and 3 parts per million, respectively) was as good as that obtained with tri-basic copper sulfate spray. Higher concentrations (100–10 and 60–6) were significantly better.

Although the large scale tests indicated the effectiveness of antibiotics the pathologists cautioned that commercial use will depend on costs of these materials in relation to the amount of injury to fruit which results from present control practices.

Goodman's Work

Speaking before the American Institute of Biological Sciences at Gainesville, Fla., Dr. Robert A. Goodman, University of Missouri, also reported on work involving the Agri-mycin mixture.

Goodman's field trials were held during 1954 in Missouri apple orchards, several of which had fire blight in "Epidemic proportions" and included about 1,400 trees in the test plots.

Results were termed "most gratifying" by Goodman who noted that while 100 parts per million was the lowest concentration of antibiotic in water that was used in 1953 tests, 50 and 25 ppm were equally effective in 1954.

In the 1953 work, seven spray applications provided complete control while this year approximately the same degree of control was established by three or four sprays applied at four to five day intervals before, during and after blossoming season. This success was achieved despite more severe fire blight infestations in 1954 than during the previous year, Goodman claimed.

Because of this successful work Goodman said that definite recommendations can be expected from the Missouri Ag Experiment Station for fruit growers in 1955. ◆

Second CACA Conference

NEARLY 200 representatives of United States and Canadian farm chemicals producers met at the Seigniory Club, Montebello, Quebec, for the second annual meeting and conference of the Canadian Agricultural Chemicals Association held October 28-29.

Delegates elected M. F. Anderson, general manager, Naugatuck Chemicals, Montreal, president of the group to succeed Arthur H. Carter, general manager, Green Cross Products, The Sherwin-Williams co. of Canada.

Conference Theme

Theme of the meeting was "The Importance of Agricultural Chemicals in our National Economy," and included on the program were two panel discussions by members of the Canada Department of Agriculture and papers on recent developments in farm chemicals by Dr. F. E. Barron, American Cyanamid co.; Dr. H. Douglass Tate, Naugatuck Chem. div. and Dr. R. C. Scott, Pittsburgh Coke & Chem. co.

Tate reviewed development of maleic hydrazide, noting the variety of uses for this versatile material, and suggesting a number of potential fields of application. Considering these future markets Tate said that the "potential markets for MH may run into many millions of pounds" adding that in the U. S. and Canada on tobacco alone, it is around three million.

Meta-systox was seen by Dr. R. C. Scott as a big step forward in development of systemic insecticides. The material, he reported, is somewhat less toxic to mammals than systox while sacrificing some of its insecticidal efficiency. About twice as much of Meta-systox is required for control of insects such as aphids and mites, controlled by systox.

Symposium on Research

A symposium on results from the Canada Department of Agriculture research program on pest control included R. Glen, chairman; W. A. Ross, A. J. Skolko and P. O. Ripley, all of the Science Service and Experimental Farms Service.

Ross outlined some data indicating trend in sales of pest control products in Canada. Greatest gains during 1947-1953 were registered by Chlordane dusts and wettable powders, DDT dusts, wettable powders and emulsifiable concentrates, BHC and lindane, organic phosphates and dry lime sulfur.

Dr. Skolko covered development and use of fungicides and concluded that improvements in efficiency of fungicides presently in use might be expected along with development of new materials of greater specificity. He added that the development of systemic fungicides capable of providing chemical immunity is not beyond the realm of possibility.

Canadian acreage sprayed with herbicides has remained at 12 to 13 million since 1950, according to Dr. P. O. Ripley, with some 98 per cent of the control work done in the three Prairie provinces.

Ripley stated that one of the most important problems in weed control is simplification and standardization of products. He added that there are too many formulations, particularly of 2,4-D, and the variable acid content and rate and method of application is too complicated.

Panel on Gains to Farmer

Four Canadian agriculturists participated in a panel discussion on gains to the farmer through proper use of farm chemicals. James Farquharson, president of Canadian Seed Growers Associ-

CACA officers and directors: J. H. Elliott, Rohm & Haas; E. P. Aikman, Nichols Chemical; J. D. Ruttan, Chipman Chemicals; R. M. Ferguson, Dow Chemical; M. F. Anderson, Dominion Rubber; A. H. Carter, Sherwin-Williams; M. E. Ward, DuPont Canada; R. G. Smith, Charles Albert Smith; K. B. Owens, Monsanto.

ation cited the problem of resistant weeds, commenting that removal of competition by killing of susceptible weeds to some extent permits the resistant weeds to become more of a problem than if herbicides had not been used. Farquharson said that it has been his experience that the increase of these resistant weeds must be carefully watched if satisfactory use of herbicides is to continue.

The seed grower also mentioned research indicating that genetic make-up of cereal crops may be affected by 2,4-D. As a safeguard, his association discourages use of the material on "foundation and elite plots."

H. C. Greenlaw reported that Premerge holds considerable promise for commercial growers of potatoes as a supplement to good cultivation. He also stated that a major mistake of many growers is not using pest control chemicals early or often enough.

Use of plant hormones on orchard crops was considered by D. A. Kimball who stated that it will be a "notable milestone" when chemical sprays are developed for thinning all kinds of fruit. Orchardists' pest control problems, said Kimball, include the increasing number of applications required and a complexity of trade names for a single chemical. He asked that control recommendations be kept simple and practically significant.

LEFT: New CACA president, M. F. Anderson, Naugatuck Chem. div., Dominion Rubber co., with past president, A. H. Carter of Green Cross div., Sherwin-Williams co. RIGHT: Bert S. Hyde and John L. Sharpe, Atlas Powder co.

W. H. Silversides, Interprovincial Cooperatives, Ltd.; J. H. Trotter, Natural Products co.; John A. Rodda and George Kerbey, Fairfield Chemical div.

LEFT: A. B. Pinard, Sherwin-Williams; Scott James and R. C. Scott, Ag. Chem. div., Pittsburgh Coke & Chem. RIGHT: Mance Barrow, Hercules Powder; Dr. S. Cohen, Gallowhur Chemical corp. and Dick Both, Hercules Powder.

Public Relations Panel

Participating in a panel discussion on "Bring the Message to the Farmer," E. M. Wilson, advertising director, Montreal's FAMILY HERALD & WEEKLY STAR, told of the need for editing carefully any press releases, deleting from them the obvious advertising approach. Such releases should be sent out in news form, he added, directed to the reader rather than the potential customer.

Other members of this panel included Richard G. Lewis, publisher, CANADIAN BROADCASTER & TELESCREEN; S. N. Hodgins, director, Canadian D of A information service; James D. Moore, secretary-treasurer, Canadian Council on 4-H Clubs and A. H. Carter.

Guest speaker at the CACA banquet was S. E. Barry, director of production service, Canadian D of A, who cited accomplishments in various parts of the Dominion through applications of pesticide materials. Charles C. Petter was guest speaker at the association's luncheon.

Officers and directors elected, in addition to President Anderson, were Ramsay G. Smith, Charles Albert Smith, Ltd., 1st vice president; E. P. Aikman, The Nichols Chemical co., Ltd., 2nd vice president; Keith B. Owens, Monsanto Canada Ltd., secretary; M. E. Ward, DuPont Canada, Ltd., treasurer; J. H. Elliott, Rohm & Haas co. of Canada, Ltd., director.

R. M. Ferguson, Dow Chemical of Canada, Ltd.; J. D. Ruttan, Chipman Chemicals Ltd. and Arthur H. Carter continue as directors for another year. ◆

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Agronomists' St. Paul Meet

SEASONAL application of fertilizer received a boost at the annual meeting of the American Society of Agronomy held in St. Paul, Minn., Nov. 8–12. Spencer Chemical's Proctor W. Gull presided over a meeting which included papers by four experiment station workers, a USDA worker, a Nebraskan farmer and W. F. Price, Swift and company.

Price said that soil scientists need no education on the reasoning for increased "off-season" fertilizer applications, adding that most important is the development of the need in class rooms, labs, extension meetings and field plots. Present incentives such as pre-season discounts, well cured goods and availability of a choice of goods apparently are of insufficient importance to most farmers, commented Price.

The Swift & co. representative concluded that storage in the soil economically is the only alternative to storing it in the barn and, if good cause can be found for seasonal application, the term "off-season" will become obsolete.

G. E. Smith of the University of Missouri reported that in his state increased rates of fertilizer application to raise soil nutrient levels rather than fertilization of single crops is gaining acceptance. On most soils, he commented, there has been little difference in response from mineral treatments applied at different seasons.

Pointing out that most fall-seeded small grains follow soybeans or lespedeza, Smith pointed out that a high level of available nutrients in the fall is essential for vigorous growth and winter survival. Except on the most sandy soils, fall application of nitrogen has been as effective as spring top dressing.

Similar increases, he continued, have resulted from use of nitrogen applied to grassland for either seed or forage production whether applied in fall or spring. Increasing quantities of nutrients are being

W. F. Price

plowed down in late fall or early spring for corn, he added, and on cotton soils containing much clay, fertilizer is being "bedded" to save time in planting operations.

Use in Southeast

W. B. Andrews, Mississippi AES, reported that by and large in the Southeast, most fertilizers should be applied relatively close to the time of use by crops.

Phosphate should be applied in contact with drilled seed in the case of small grains and, where seed and fertilizer are broadcast, phosphate application a month before planting is much less effective than at-planting application. Even though there may be less leaching of nitrogen from heavy than from sandy soils, Andrews stated, it appears that only on soils with an impermeable pan would nitrogen carry over from fall for spring seeded crops.

Nitrogen in June, he said, has not been effective for summer pastures where summers were dry except on low wet soil. Andrews claimed that for nitrogen to be effective on most pastures in most years it would have to be present during the spring months when moisture is plentiful. This, he commented, would necessitate grazing tall rather than short grass, a subject which has not yet been investigated.

Experiments cited by Clifton Halsey and John M. MacGregor, University of Minnesota, show that there is apparently less difference between fall and spring applications of nitrogen on plowed land than has been supposed. Nitrogen treatments were most efficient on new grass stands when they were top-dressed in the spring. The two researchers also reported that legumes seemed to utilize phosphate and potash best when fertilized while in active growth.

Two methods of increasing Corn Belt fertilizer consumption, according to John Pesek, Iowa State College, involve application of fertilizer in late summer, fall and winter for corn, oats or soybeans the following year or reduction of frequency of application during the rotation by anticipating total needs of all crops and applying only at one or two phases in the rotation rather than annually.

Both systems, he added, would tend to relieve stress on the farmers' labor supply and experimental evidence indicates some of the

possibilities in adopting these systems to the area.

L. B. Nelson, USDA, discussed the various factors influencing storage and movement of plant nutrients in the soil, particularly as they influence seasonal fertilizer application. He included yield response data contrasting seasonal usage in various regions.

Weed Control Division

F. L. Timmons, USDA, headed two meetings of the Weed and Weed Control division. G. C. Klingman and J. Clayton Davis, North Carolina State College, presented two papers relating to the herbicidal use of ammonium nitrate solutions.

The first dealt with the herbicidal influence of 2,4-D, potassium chloride and wetting agents in ammonium nitrate solutions and the effect of wetting agents on surface tension. Tests conducted by the researchers showed that addition of one or all of the materials tended to increase herbicidal toxicity of ammonium nitrate solutions.

No differences were reported in field observations between 10, 20, 30 and 40 grams of the wetting agent per gallon of nitrogen solution. Addition of up to .01 per cent (0.49 grams/gallon spray) of wetting agent decreased surface tension measurements but concentrations above this gave little further reductions.

Little or no difference in surface tension reduction was noted between non- and anionic agents in the solutions and a cationic type caused precipitation and could not be used.

In their second paper, Klingman and Davis reported on the use of a mixture of fertilizing salts, a wetting agent, 2,4-D and Karmex M in corn as a post-emergence herbicide following pre-emergence treatments and various cultivation treatments.

Yield Tied to Control

There appeared to be a close relationship between corn yields and the degree of weed control, and a water solution of ammonium nitrate plus a wetting agent with or without 2,4-D proved a very effective post-emergence treatment when applied as a spray directed to the base of the corn plants and to weeds in the middle. Broadleaf plants were controlled more effectively when 2,4-D was included in the spray.

Karmex M gave weed control one to two times as long as 2,4-D with no apparent injury to the corn but dinitro, applied as a post-emergence over-the-top spray was injurious to the corn and failed to give satisfactory control.

No herbicide treatment applied at the correct time but at only one-half its recommended rate gave satisfactory weed control in tests conducted by Lambert C. Erickson, University of Idaho. He reported that although half rates significantly reduced weed yield by about 50 per cent, they did not significantly reduce the weed stand.

In only one instance, said Erickson, did a treatment affect viability of weed seeds and this occurred when an early application of 2,4-D derivatives prevented production of viable seed in lambsquarter.

Livestock Losses

A paper by J. D. Furrer and Leon Chesnin, University of Nebraska, referred to the cases of livestock loss that have been attributed to chemical poisoning due to animals grazing weed species recently sprayed with 2,4-D.

In their 1951 experiments, ammonium nitrate was applied at 0, 60 and 120 pounds per acre to pigweed, wild mustard, velvet leaf, crabgrass and sudan grass with 2,4-D applied at 0, 1/8, 1/4 and 1/2 pound per acre when plants were in an early growth stage.

With increasing amounts of fertilizer there were highly significant increases in the nitrate-nitrogen percentages of all species to amounts that exceeded the minimum toxic level to livestock. A decrease in the rate of uptake of nitrogen by the plants was noted and increased total nitrogen contents due to the increase in nitrate-nitrogen content.

Application of 2,4-D had no significant effect on composition of the samples although there was a tendency for the nitrate-nitrogen content of all species except velvetleaf to be reduced following 2,4-D use.

The following year the same rates were applied to pigweed, velvetleaf, giant foxtail, sunflower, giant ragweed and annual smartweed in plots containing residual nitrogen fertilizer levels from 1951.

These had a marked effect on growth and dry matter production but had no significant effect on total nitrogen or nitrate-nitrogen contents of the plant. The plants, harvested at a more mature state than in 1951, were all well below the minimum for toxicity to livestock.

Past ASA presidents, Dr. H. C. Myers (left) and Dr. C. J. Willard (right) congratulate the newly-elected president, Dr. G. G. Pohlman.

Richard D. Ilnicki and C. J. Willard, Ohio Agricultural Experiment Station, report their belief that, up to the tasseling stage there is no stage of growth which is critical or particularly dangerous for 2,4-D applications. They point out that, under certain environmental conditions such as periods of high temperature and rapid growth, corn can be seriously injured at any stage.

2,4-D and Sorghum

The effect of 2,4-D and MCP on sorghum was considered by W. M. Phillips, USDA and Kansas State College. Weed-free Midland and Westmoreland milo and Ellis sorgo were treated with 2,4-D in 1950, Midland and Ellis were treated in 1952 with 2,4-D and MCP and in 1953 Midland was treated with both chemicals. Ester and amine formulations of both were used.

Although in 1950 there was no significant difference between reactions of the two grain varieties or between formulations of 2,4-D in 1950 and 1953, there was a highly significant difference in the latter in 1952.

In all experiments there was a marked difference between dates and rates of application, and yield reductions were greatest when the crop was sprayed in the 10 to 12 leaf stage. Spray treatments during early stages in crop development (5-6 leaves) usually caused proliferation of brace roots and reduced the rate of development of the feeder root system, although these did not result in large yield reductions.

Soil Chemistry Division

D. G. Aldrich and J. R. Buchanan, University of California, presented a paper on lab studies of injected liquid nitrogen dioxide with special reference to its possible use as a fertilizer. Results cited showed that the material is readily absorbed by the soil and that losses as gaseous nitrogen dioxide or nitric oxide were less than one per cent.

The researchers added that in acid, neutral or unbuffered alkaline soils the material produces a sufficiently acid soil reaction to insure rapid and complete chemical oxidation to nitric acid. In highly buffered alkaline-calcareous soil it produces little change in soil reaction and is only partially oxidized to nitric acid. About one-third of the nitrogen injected exists temporarily as nitrous acid.

The behavior of metal chelate complexes in a number of soils was investigated by O. R. Lunt, N. Hemaidan and A. Wallace, also of the University of California, who reported that EDTA, DTPA and HEEDTA molecules are fixed in varying degrees in different soils and that weak salt solutions do not remove the fixed chelate.

They added that the degree of fixation is not related to the $CaCO_3$ or the organic matter content but to the amount of clay present in the soil. For many soils, the fixation of the metal and the chelate

W. L. Nelson

was approximately equivalent but above 7.5 more iron than chelate was fixed. At high *p*H values, they added, manganese was almost completely fixed. A saturation point for fixation was indicated.

Soil Fertility

Application of Ultrawet surface active agent to a Miami silt loam resulted in yield increases averaging 65 per cent. according to a paper by K. C. Berger and L. G. Nelson, University of Wisconsin. Crops involved were alfalfa, red beets, oats, corn, sugar beets, red clover, spinach and canning peas, and surfactant applications included 25, 50 and 100 pounds per acre.

The residual effect of the application was determined the following year, and yields of cabbage, sweet corn, buckwheat, sudan grass and canning peas were increased.

On other soils, yields of alfalfa brome hay increased as much as 40 per cent, oats yields increased from 10 to 17 bushels per acre and cabbage, sweet corn, buckwheat and potato harvests increased slightly.

In 51 experiments over six years Lloyd Dumenil, Iowa State College, found that the residual effect of nitrogen fertilizer applied to corn was statistically significant on corn and oats.

On silt loams and heavier textured soils the average effect from moderate application rates was about one-fourth of the nitrogen applied.

Use of Soil Tests

Three North Carolina Department of Agriculture and State College scientists, J. W. Fitts, C. D. Welch and W. L. Nelson, reported that much greater use can be made of soil test summaries than just the evaluation of the fertility status of soils in respect to soil nutrients.

Results for phosphorus and potassium, when summarized in a two-way table give a good indication of the ratio of these nutrients most needed in fertilizers, and the summary table may be blocked off to show pounds of P_2O_5 and K_2O recommended at different fertility levels for the various crops. Percentages of samples in the various categories indicates the proportion of fertility ratios needed. Seven domestic and three foreign sources of phosphate rock were compared by W. H. Armiger, M. Fried and W. L. Hill, USDA, for their ability to supply phosphorus to alfalfa and buckwheat plants grown on three soils of different origin. Results showed that the rock source is as important agriculturally as either amount applied or the soil involved.

A considerable difference among the materials was indicated by plant growth response, according to a paper presented by the three Federal workers. Phosphorus recovery by alfalfa after a 189 day growth period showed Morrocco, Gafsa Tunis and Curaçao to be superior to the domestic sources.

On four of the six soils, one of the two preparations of Florida

pebble phosphate and the South Carolina rock were superior to all other domestic materials, while Virginia apatite was the poorest source, differing little from the check.

A joint meeting of the plant nutrients and agronomic education-extension divisions met to hear papers on education for efficient use of fertilizers.

Dealer Education

H. B. Cheney, Oregon State College, reported on a questionnaire sent to state extension agronomists and soil specialists dealing with educational activities by colleges for or with fertilizer dealers and manufacturers.

Of the 38 responding states, about 60 per cent reported that most or nearly all dealers generally understood and encouraged use of college fertilizer results and recommendations. Only half felt that most dealers understood and encouraged use of soil tests and 40 per cent said that dealers and manufacturers solicited their aid on fertilizer problems to a considerable extent.

A recent summary of fertility experiments on Virginia feed crops, as reported by H. L. Dunton, Va. Polytechnic Institute, shows that the average farmer cannot afford to cut down on the amount of fertilizer used but would improve his crop production efficiency by increasing applications of plant food.

E. W. Segebrecht, Spencer Chemical director of sales development, also addressed the joint meeting, discussing ways in which dealers can produce fertilizer usage. Spencer's George V. Taylor was originally scheduled to speak but was unable to be present.

Segebrecht pointed out that farmers will not use a fraction of the fertilizer they can profitably apply unless intelligent dealers show the way. The average dealer, he continued, often has the only word with the farmer in regard to fertilizer use and is usually the last contact that a farmer makes when buying and using fertilizer.

The dealer is a key man in developing new practices with regard to soil fertility, he concluded, and is often the forgotten man in the educational chain between land grant colleges and the farmer. ◆

Spray Drift Findings On Air Application

AT THE 1954 Cotton Production conference in Phoenix, Ariz., Norman B. Akesson, assistant agricultural engineer, Agricultural Experiment Station, University of California, presented an excellent paper on some highlights of agricultural pest control equipment research.

In his remarks he gave special attention to the problem of drift from aircraft sprayers. After reviewing several phases of current equipment research, Akesson continued:

Spray Drift

"One of our serious problems has been drift of spray materials, particularly 2,4-D from aircraft. This does not mean the ground rigs cannot also produce serious drift, but evidently they are not so conspicuous. Work is continuing towards solution of this problem, but it is evident through our test runs using fixed wing planes and helicopters that a certain amount of the spray always leaves the field of treatment as fine particle size drops which can cause damage for some distance around the treatment field. We are, however, confident that little damage can result if:

1. Amine and low volatility ester formulations of 2,4-D only are used.

2. Low pressure (maximum 45 psi) and large simple orifice nozzles or jets not less than 1/8 inch diameter are installed at one foot spacing.

3. Spraying is discontinued in winds above five mph away from nearby susceptible crops or no spraying is done at all when wind is in direction of nearby crops (two miles).

4. Spraying is discontinued after 10 a.m. when temperatures measured about 10 feet above the ground go above 90 degrees.

"In addition to the above specific factors, ordinary common sense and responsible attitude must be exercised by all parties concerned to hazardous spray applications—farmers, aircraft operators and the regulatory officials alike.

Balloon Run Results

"Much of our present research efforts are being directed toward further study of the aircraft as an agricultural chemical applicator. The balloon runs and other tests are significant means whereby we can study the characteristics of the plane and its action on the air borne sprays and dusts. The balloon runs have shown us:

1. Air motion downward is relatively slow and spray is not strongly forced into and around the plants. The layer of air between plane and ground is compressed by the approaching plane and expands outward from the wing tips during and briefly after passage of the plane.

2. The principal motion is outward toward the wing tips and upward in the vortices created at the wing tips. This aids in producing a broad swath but also lifts the spray making it more subject to drift.

3. For least amount of drift, and at the same time the narrowest swath, the spray boom should be as far downward from the wing as possible. This is limited with the bi-plane but can produce a significant change in the sweep-out pattern of the air flow when used on a high wing monoplane." ◆

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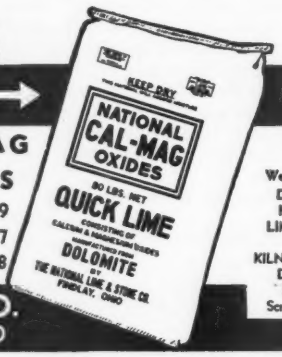

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Madison NH_3 Conference

ONE most encouraging note from the anhydrous ammonia conference held at Madison, Wisc., on Aug. 18, was recognition by many of the speakers of the need for balanced fertilization—the proper use of phosphorus and potassium plant foods as well as nitrogen.

Sponsored by the Department of Soils, University of Wisconsin, in cooperation with the Agricultural Ammonia Institute and the AAI's Great Lakes division, the conference included talks by outstanding

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Fertilizer Section, NSC, meeting (advance)	Oct.	46
Fertilizer Section, NSC, meeting (followup)	Nov.	45
"Progress in Fertilizer Safety"	April	55
"Safety Facts and Figures"	Aug.	48
Three Year Safety Plan	Aug.	51
"Your State Safety Department"	Feb.	25
"Salisbury Coop Plant Triples Fert Output"	July	52
"San Francisco C of C Ag-Business Meet"	May	63
Scholl, Walter; Wallace, Hilda M. and Fox, Esther I.—"Fertilizer Consumption Up, 1952-53"	March	27
——, "Fertilizer Consumption in the US, 52-53"	June	35
Seed Protectants	Jan.	40
"Seed Treatment Fungicides"	Feb.	11
Senesac Soil Service Nitrogen Distribution Plant	Sept.	50
Seney, W. T.—"Use Sound Cost Accounting Practices"	May	36
Shell Chemical Corp. Ventura Calif. Plant	Jan.	26
Shuford, Forrest H.—"Your State Safety Dep ."	Feb.	25
Sod Crops, Fertilizer Placement for Efficient Production of	Feb.	21
Soil Conditioner Trade Practices, FTC	Dec.	41
"Soil Tests and Fertilizer Prescriptions"	April	47
S. A. Markets, Taylor Chemical Reports on	March	23
Southern Weed Conference	Feb.	29
"Spencer Chemical Opens Vicksburg Works"	March	45
"Spencer's Top Farm Bankers"	Aug.	6
"Spray Drift Findings of Air Application"	Dec.	51
Starker, Chuck—"Pacific Branch, ESA Meet . ."	Aug.	25
"Stauffer Chemical's Tacoma Plant Open"	March	5
"Storage of Herbicides"	Aug.	42
"Sulfur Consumption Down in 1952"	Aug.	46
"Summers Fertilizer Opens Sioux City Plant"	May	55
Surface Active Agents, Influence in Superphosphate, Mixed Fertilizer Production	Sept.	43

T

"Taylor Chemical Reports on S. A. Markets"	March	23
"Teamwork Stressed by Dr. C. E. Palm"	Sept.	63
"Telling Your Story"	Oct.	36
"TVA Continuous Ammoniator" Part I	July	38
"TVA Continuous Ammoniator" Part II	Aug.	34
"TVA Fertilizer Has 97 per cent Nutrients"	Jan.	28
Texas City Dicalcium Phosphate Plant	June	63
"Tri-State Chemical Opens Henderson Plant"	July	63
Truitt, Paul T.—"Fertilizer Production Facilities"	April	39

U

Upjohn Markets New Antibiotic Formulation	Dec.	42
"Use Sound Cost Accounting Practices"	May	36

V

"Vermiculite-Carried Chelates"	July	36

W

Walker, A. H.—"Range Brush Control"	March	49
Walker, J. A.—"Farm Chemicals Credit Situation"	May	23
Wallace, Hilda M.; Scholl, Walter and Fox, Esther I.—"Fertilizer Consumption Up, 1952-53"	March	27
——, "Fertilizer Consumption in the US, 52-53"	June	35
"Were You in the Black in '53?"	Jan.	9
Western Ag. Chem. Association Meeting	Dec.	40
Western Cotton Production Conference	May	13
"Western Phosphates Plant Opened"	Feb.	39
"What Can Be Expected From the Miller Bill"	Sept.	21
"What Was New in '53"	Jan.	17
Woodle, H. A.—"Fertilizer Placement for Efficient Production of Sod Crops"	Feb.	21
Yates, L. D.; Nielsson, F. T. and Hicks, G. C.—"TVA Continuous Ammoniator" Part I	July	38
——, "TVA Continuous Ammoniator" Part II	Aug.	34
"Your Investment in Progress"	Dec.	38
"Your State Safety Departmen'"	Feb	25

authorities including Wisconsin's C. J. Chapman, K. C. Berger, M. L. Jackson and A. E. Peterson; Mathieson's chief agriculturist, Arthur M. Smith; Missouri's George E. Smith; Minnesota's John M. MacGregor and Kirk Fox, editor of SUCCESSFUL FARMING.

In his banquet address, Fox lauded the nitrogen industry for its accomplishment in breaking "the protein barrier of the centuries." Looking into the future, he predicted that within 10 years synthetic nitrogen will definitely pull ahead of nitrogen produced by legumes.

Growth of N Usage

C. J. Chapman cited the tremendous growth of nitrogen usage while pointing out that this serves to accentuate the need for more minerals. We must stress "as never before," he added, the importance of lime, phosphate and potash. He also pointed to an increasing need for certain of the trace and secondary elements for a balanced fertility.

"The manufacturers of nitrogen fertilizer, whether it be the solid forms or liquid forms," he continued, "must work together with the manufacturers and distributors supplying phosphate, potash, trace and secondary minerals and encourage farmers to use these minerals for balanced fertility as well as lime to maintain their soils at the proper reaction; otherwise we are headed for trouble."

Chapman pointed out that many NH_3 distributors are now cooperating in this endeavor and also reported that bulk spreaders are coming into wider use.

Chapman referred to pasture improvement as a great opportunity for low unit cost milk and meat production and pointed out that the question of what fertilizer to use is really a problem of determining the cost per unit of plant food applied that counts the most.

Dr. George E. Smith, Missouri, also pointed out that nitrogen alone is not sufficient but pointed out that "nitrogen has been its own salesman" because of the spectacular results that have been obtained through its application.

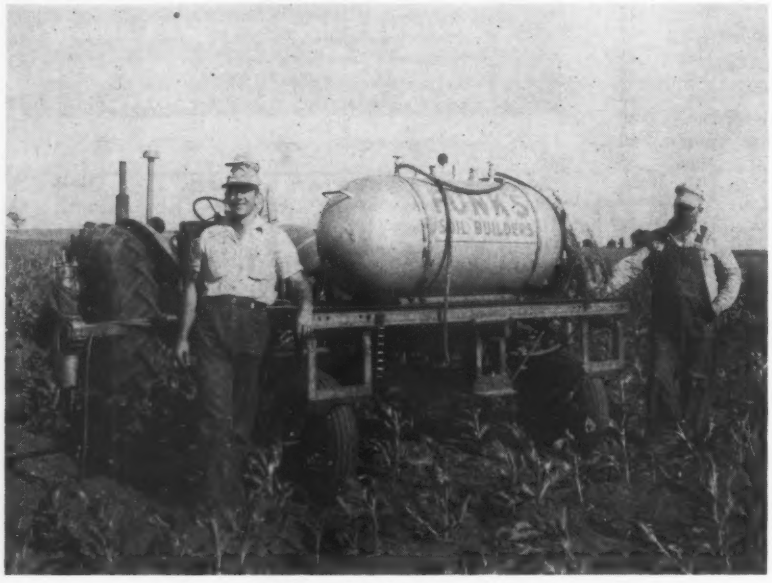
Application Gains Reviewed

The Missouri soils specialist reviewed the gains in nitrogen application that have occurred in the Mississippi and Missouri valleys since 1949 on soils from which crop yields were originally limited by a nitrogen shortage. After nitrogen carriers were applied alone, mineral levels were reduced to a level where continued N applications did not provide the spectacular responses of previous years.

It has been shown, he continued, that P and K will provide a response following liberal nitrogen applications. "Most of this lack of response," Smith added, "has been the result of too much emphasis on a single element nitrogen rather than the promotion of a balanced fertility program." He added that farmers are becoming better educated to soil processes and fertilizer needs.

"The continued growth of the use of anhydrous ammonia," he concluded," depends on supplying farmers with the overall needs of individual fields—not necessarily the use of ammonia alone. Improper service and unbalanced treatments can retard the use of any material."

Dr. K. C. Berger, Wisconsin, also viewed soil tests and fertilizer prescriptions as the answer to high yields and stressed that, after a few years, continued use of straight nitrogen will not give yield increases.



One of Funk's field application NH_3 tractor drawn rigs.

NH_3 As a Soil Conditioner

An interesting change in subject matter was provided by Dr. Arthur M. Smith, Olin Mathieson Chemical corp., who spoke on the value of anhydrous ammonia as a soil conditioner, a concept that is still relatively unknown.

Describing the conditioning action, Smith said that NH_3 "dissolves organic matter and redistributes it sufficiently on the surfaces of the mineral soil particles to form 'water-stable' aggregates or granules, thereby improving the structure of the soil."

Corn Belt farmers have told him, Smith reported, that in the black clay and brown silt loam areas plowing is much easier where anhydrous ammonia has been applied. This effect is not limited to soils high in organic matter, for similar data has come from New Jersey and other areas.

The Mathieson scientist pointed out that a plow down of corn stalks or wheat rubble without added nitrogen results in all readily available nitrogen being used by soil bacteria and other organisms which serve to decompose the organic matter. Addition of anhydrous NH_3 in the autumn not only prevents this but also helps build up active organic matter content since a pound of nitrogen holds 20 pounds of organic matter in the soil a year or longer, on the average. ◆

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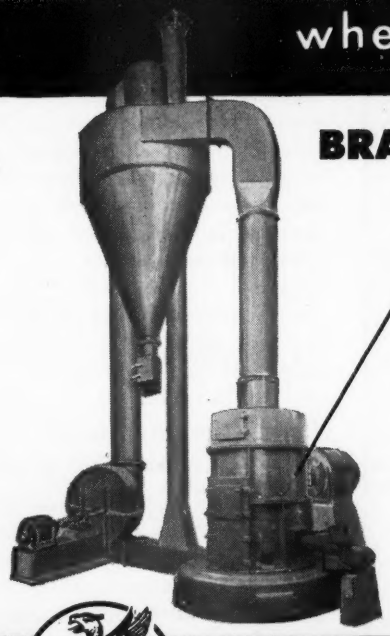

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Pink Bollworm Found Outside Ark. Quarantine

The gin trash inspection program annually conducted by the Pink Bollworm Control Project and cooperating state agencies is well under way, and to date has resulted in the recovery of pink bollworm specimens in three counties outside the quarantined area of Arkansas. In 1953, collections of this serious cotton pest were made in two southwestern Arkansas counties, Hempstead and Miller, resulting in eight counties in the southwestern part of the State being placed under quarantine. Gin trash inspections recently completed in the quarantined counties revealed infestations in six of the counties, Sevier, Little River, Howard, Hempstead, Miller and Lafayette. As of Oct. 31, inspection in counties outside the quarantined area had resulted in the finding of specimens in Clark, Logan and Yell.

Although all of Oklahoma is under quarantine, pink bollworms have been found for the first time in several counties of the state. Gin trash examinations through October resulted in the finding of specimens in Choctaw, Haskell, Johnson, Marshall, Muskogee, Okfushee, Oklahoma, Pontotoc and Pottawatomi counties. Most of the counties that had previously been found infested were showing a slightly higher rate of infestations than heretofore.

Texas gin trash examinations to date have not shown any alarming increase over last season. In the Lower Rio Grande valley of Texas the average number of pink bollworms collected was slightly higher than last season but very low compared to the average of recent years. The cotton areas of Mexico adjacent to the Lower Rio Grande Valley showed the average count of pink bollworms per bushel of gin trash to be less than on the United States side of the river but even this number was a marked increase over 1953 for the same area. East Texas counties bordering Louisiana are about equally divided in showing increase and decrease over the 1953 inspection. A greater increase was found in some central Texas counties as well as the west-central counties of Tom Green, Concho, Coke and Irion. Other west-central counties showed a decrease. Northeast Texas counties showed about the same degree of infestation as last year, but in the South Plains area of west Texas most of the counties recorded a higher infestation with a few about the same. Some increases were found in the Winter Garden area and South Central counties.

Presented in cooperation with the Economic Insect Survey Station, Plant Pest Control Branch, Agricultural Research Service, USDA.

Louisiana inspections have not revealed any infestations outside the quarantined area. However, in the quarantined area, Bienville and Webster parishes were found infested for the first time. Pink bollworms were found in the old regulated parishes of southwestern Louisiana at the rate of .035 per bushel of gin trash as compared to .003 last season.

Inspections have been made in the following states with results, to date, being negative: Alabama, Georgia, California, Tennessee and Mississippi.

Pink bollworms have been intercepted in several instances at the traffic inspection stations established in Arkansas, Louisiana and Mississippi to examine the movement of materials which might harbor pink bollworms from quarantined to free areas. During the latter part of September, the Fulton, Ark., station recovered 83 worms from a small portion of material. Pink bollworms were also intercepted at the Garland, Ark., and Many, La., stations. At the Vicksburg, Miss., station, 10 specimens were found in cotton bolls carried by a tourist.

Illinois and Ohio Spittle Bug Survey

Surveys to determine the fall adult spittle bug populations have been conducted in Illinois and Ohio. In Illinois, where the sweepings were taken in clover and alfalfa fields, the highest average was found in the northeastern part of the state with an average of 2.4 adults per sweep. The highest average for an individual field was 6.5 per sweep. This was slightly higher than in 1953 for the northeastern area but counts were lower in the eastern section than last season.

The two sections of Ohio showing an average of more than one adult per sweep during the 1954 fall survey were the northeast with 2.51 adults per sweep and northeast-central with 2.79. Each of the other sections of the state recorded a lower rating than last season. The most marked declines were in the central and southwestern areas, which declined from 1.82 to 0.72 and 1.25 to 0.71, respectively. The Ohio survey is based upon the criterion of one spittle bug per sweep as an indication of the number that might create an economic infestation the following year.

Fruit Piercing Moth Reported in Mexico

Mexican Fruit Fly Control Project cooperators recently reported on the activities of a fruit piercing moth in that nation. In 1953 the moth, *Gonodonta bidens*, was reported as damaging citrus fruit in the states of San Luis Potosi, Tamaulipos and Nuevo Leon, Mexico, during the months of September, October and November. Losses

Vanicide 51 Controls Stored Rose Botrytis

Companies in rose growing areas of the country will be interested in experiments carried out on control of Botrytis disease of stored roses by Dr. Saul Rich of the Connecticut Agricultural Experiment Station.

Dr. Rich found Vancide 51 (R. T. Vanderbilt co.) to be suitable in checking the fungus, and in tests the material was sprayed on the surface of stacks of roses as a 1 per cent solution at two week intervals throughout the storage season.

At the end of this period, 44 per cent of unsprayed plants were diseased compared to only 5 per cent of those treated. In the field, sprayed plants showed no spray damage and appeared to sprout earlier and grow more vigorously than unsprayed plants selected from the 56 per cent which showed no disease symptoms.

Since this fungus attacks many plants in addition to roses, this spray treatment may be adaptable for other applications.

Pasture Fertilization

More efficient production can be obtained from high-yielding grass-legume mixtures grown for pasture and forage by using fertilizers prepared to meet plant needs, and perhaps by making limited applications more frequently, say USDA agronomists. Studies by USDA's Agricultural Research Service and several eastern State experiment stations on typical eastern soils show, for example, that fertilizers containing a high percentage of potash do a better job than the commonly used superphosphate fertilizers applied in the same amounts.

Soils in the Middle Atlantic and New England States are low in native potash. Yet tests have shown that such high-producing mixtures as bromegrass-alfalfa and orchardgrass-Ladino clover will annually remove from 100 to 150 pounds of potash per acre from the land compared to only 20 to 40 pounds of phosphate. Agronomists have found that on eastern soils these grass-legume mixtures respond well to fertilizers with a nitrogen-phosphate-potash ratio of 0–10–20.

The tendency of plants to absorb more potash than they need when it is abundant indicates that several smaller applications of fertilizer during the year instead of the usual single application of a large amount might be the most efficient way to use potash. Making frequent applications of potash also would help minimize the chemical's tendency to leach away. However, further research is needed to determine whether benefits in increased production would justify the expense of making two or three applications of fertilizer a year.

Pests (continued)

in early oranges ranged from 20 to 50 per cent.

The moth has appeared again in the Northeastern section of that Nation but economic damage up to Oct. 25, the time of the report, remained insignificant. The first moth captured this year was taken during the first week in September, and although a few moths were observed from time to time there has been no significant build-up in population. The moth is not known to be in the U. S. ◆

Statistics

Potash Deliveries Gain

Total deliveries by US potash producers and importers for the first nine months of 1954 totaled 2,541,744 tons of potash salts containing 1,491,874 tons K_2O, according to the American Potash Institute. This represents an increase of 4 per cent in salts and nearly 5 per cent in K_2O over the same period of 1953.

The institute reports that of this total, 2,424,167 tons of salts containing 1,419,227 tons K_2O were

Calendar

Dec. 2—N. D. Fertilizer school, Fargo.

Dec. 2-3—Beltwide Cotton Insect Control conf., Adolphus Hotel, Dallas, Tex.

Dec. 3—S. D. Annual Fert. Dealers school, College Station.

Dec. 5-9—Agric'l. Ammonia Inst., Jung hotel, New Orleans.

Dec. 5-9—Nat'l. Jr. Vegetable Growers' Assn., Cincinnati, O.

Dec. 6—Fert. short course, U. of Minn., Institute of Agriculture, St. Paul.

Dec. 6-8—CSMA annual meeting, New Yorker hotel, New York City.

Dec. 6-9—North Central Weed conf., Gardner hotel, Fargo, N. D.

Dec. 6-9—ESA annual meeting, Houston, Tex.

Dec. 7—Exec. committee meeting, Fertilizer section, NSC, Board of Directors' Room, Spencer Chem. co., Memphis, Tenn.

Dec. 9—Ala. Fert. conf., Auburn.

Dec. 10-11—Utah State Hort. Society annual convention, Hotel Utah, Salt Lake City.

Dec. 12-15—American Institute of Chem. Engineering annual meeting, Statler hotel, New York City.

Dec. 13-14—Kans. Fert. conf., Kansas State College, Manhattan.

Dec. 17-18—Soil Fertility & Plant Nutrition short course, Columbia, Mo.

Jan. 4-5—7th annual Pesticide school, College Union Bldg., N. C. State College, Raleigh.

Jan. 5-7—Northeastern Weed Control conf., New Yorker hotel, New York City.

Jan. 10-12—Middle States Garden Supply Show, Hotel Sherman, Chicago.

Jan. 17-19—8th annual meeting, Southern Weed conf., Hotel Soreno, St. Petersburg, Fla.

Jan. 17-19—Cotton States branch, ESA, meeting, Tampa Terrace hotel, Tampa, Fla.

Jan. 18-25—Chem. & Allied Products group of the Nat'l. Assn. of Purchasing Agents. Chicago, Jan. 18; New York, 25.

Jan. 20-21—Joint meeting, Chemical Market Research Assn. and Commercial Chemical Devel. Assn., Edgewater Beach hotel, Chicago.

Jan. 24-27—Plant Maint. and Eng. Show, International Amp., Chicago.

Feb. 1-3—Eastern States Garden Supply Show, 71st Infantry Regiment Armory, New York City.

Feb. 7—Tenn. Seedmen's Assn. annual meeting, Andrew Jackson hotel, Nashville.

Feb. 23-25—4th annual conf., Use of Aerial Equipment in Agriculture, Purdue Univ., Lafayette, Ind.

March 7-9—NACA Spring meeting, Chase & Park Plaza hotel, St. Louis, Mo.

March 24-25—North Central States branch, ESA, meeting, East Lansing, Mich.

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delivered for agricultural purposes. Deliveries for the third quarter by the seven American producers amounted to 623,367 tons of salts containing an equivalent of 365,773 tons K_2O, down 7 and nearly 8 per cent respectively from the corresponding 1953 period.

Calif. Fert. Consumption

A release from the California Fertilizer Association shows that although consumption of fertilizers for the first half of 1954 reached 523,230 tons, an increase of over 7 per cent from the similar 1953 period, dry mixed goods and liquid mixtures dropped 16 and 11.8 per cent, respectively.

Big gains were registered by ammoniated superphosphate, 4,825 tons (up 35.6 per cent); 11-48-0, 3,788 tons (up 31 per cent); calcium cyanamid, 2,548 tons (up 14.32 per cent) and ammonium sulfate, 113,350 tons (up 15.62 per cent). Topping the list was aqua ammonia with 58,563 tons during the first half of '54 compared to only 35,694 tons for all of 1953.

Greatest loss was shown by normal superphosphate, which dropped 31 per cent to 26,179 tons.

Synthetics Show Gain in 1953

Shipments of synthetic ammonia, nitric acid and ammonium compounds in 1953, according to a Bureau of the Census report, are valued at $246.6 million, an increase of about 9 per cent over 1952 and 35 per cent above the 1951 figure. Synthetic ammonia shipments showed the biggest gain, jumping from $82.3 million in 1952 to $100.2 million last year.

Commercial production reached a new high with 2,287,785 tons (100 per cent NH_3) reported, 11.5 per cent larger than 1952. Production was reported by 24 plants during the year.

Ammonium nitrate production reached a new high of 1,328,159 tons (100 per cent NH_4NO_3) while 1953 tonnage of synthetic ammonium sulfate (516,494 tons 100 per cent $(NH_4)_2SO_4$) was 29 per cent less than the 1952 total. Output of ammoniating solutions also declined slightly to 356,590 tons (100 per cent N_2). A total of 10 plants reported production of ammonium nitrate (fertilizer grade) and 28 turned out ammonium sulfate.

Sulfuric acid topped all previous figures with 8,449,852 tons (100 per cent acid) shipped during the year. The contact process accounted for 7,122,871 tons and 1,326,981 tons were produced by the chamber method. Gross production of 14,022,534 tons for the year represented an increase of 5.2 per cent from 1952.

Acid plants reporting showed 110 using the contact process only, 78 using the chamber process only and eight using both methods. A total of 18 plants fortified spent acid during the year.

Super Production Up

Superphosphate production for August jumped 12 per cent above the revised July figure for a total of 144,345 tons (100 per cent APA). However, this was 13 per cent below the figure for August, 1953.

Shipments of all grades totaled 84,748 tons, up 35 per cent from July but down 8 per cent from August, 1953, and stocks on hand were 5 per cent greater than those held on August 1 and 13 per cent over those held on August 31, 1953.

Production — August, 1954

Compiled from Government Sources

Chemical	Unit	August 1954	August 1953	July 1954
Ammonia, synth. anhydrous	s. tons	224,430	193,932	211,310
Ammonia liquor, coal & coke—(NH_3 content)	pounds	3,244,159	4,116,600	3,142,983
Ammonium nitrate, fert. grade (100% NH_4NO_3)	s. tons	159,470	126,937	*146,900
Ammonium sulfate				
synthetic (technical)	s. tons	96,206	43,743	74,302
coke oven by-product	pounds	128,260,242	163,145,800	129,537,550
BHC (Hexachlorocyclohexane)	pounds	3,430,204	—	7,047,163
Gamma content	pounds	572,944	—	1,136,880
Calcium arsenate (commercial)	pounds	—	—	—
Copper Sulfate (gross)	s. tons	—	—	—
DDT	pounds	6,609,712	—	*9,496,332
2, 4-D Acid	pounds	1,253,152	—	*2,238,782
esters & salts	pounds	974,504	—	1,414,125
esters & salts (acid equiv.)	pounds	734,055	—	1,098,454
Lead Arsenate (acid & basic)	s. tons	—	—	—
Phosphoric acid (50% H_3PO_4)	s. tons	[1]232,995	214,732	*221,223
Sulfur, Native (Frasch)	l. tons	462,098	450,790	471,594
Recovered	l. tons	30,700	29,545	31,900
Sulfuric Acid, gross (100% H_2SO_4)	s. tons	1,096,573	1,131,309	1,066,874
Chamber process (100% H_2SO_4)	s. tons	180,269	209,532	170,669
Contact process (100% H_2SO_4)	s. tons	916,304	921,777	896,205
Superphosphate (100% APA)	s. tons	144,345	165,429	*128,618
Normal (100% APA)	s. tons	104,121	122,513	*85,605
Enriched (100% APA)	s. tons	3,607	—	1,200
Concentrated (100% APA)	s. tons	36,225	42,149	41,600
Wet Base (100% APA)	s. tons	392	767	213
2, 4, 5-T Acid	pounds	—	—	*216,990

* Revised. [1] Includes quantities for 1 plant previously not reporting.

FERTILIZER MATERIALS MARKET

New York

November 12, 1954

Sulfate of Ammonia. Present prices of sulfate of ammonia were extended for the balance of this fertilizer season by the producers, so it looks as though the market will remain stable.

Nitrate of Soda. Since recent price reduction was made, a slightly better demand was reported for nitrate of soda. Supplies are adequate to take care of expected demand.

Ammonium Nitrate. Reports were current that demand was rather slow at the moment but producers expected shipments to increase in another 30 days.

Urea. Demand remained limited for urea and a sharp decrease was noted in shipments of imported material. Domestic producers quoting $110 per ton, f. o. b. works, with imported quoted nominally at $115 per ton at the ports.

Nitrogenous Tankage. Offerings were scarce with one producer offering a limited amount of material at $4.75 ($5.77 per unit N), f. o. b. shipping point. A few offerings of imported material were made at competitive prices.

Castor Pomace. Producers were unable to offer any material at present, with the result that buyers were eagerly seeking supplies. The production remains low with no appreciable increase in sight. Last sales were made on basis of $30 per ton, f. o. b. production point.

Organics. Organic fertilizer materials did not fluctuate very much in the last week, and a steady market was maintained pricewise. Soybean meal was available for November shipment at $64 per ton in bulk, f. o. b. Decatur, Ill., and linseed meal sold at $66 per ton in bulk, f. o. b. Minneapolis. Cottonseed meal was quoted about $72.00 per ton, f. o. b. Memphis, Tenn. Blood last sold at $7.50 per unit of ammonia ($9.12 per unit N) f. o. b. New York and tankage at $6.75 per unit of ammonia ($8.20 per unit N) f. o. b. Eastern production points.

Fish Meal. With the menhaden season coming to a close in the North, buyers will be more dependent on imported fish meal to supply their needs. The market is nominally about $140.00 per ton f. o. b., production point.

Bone Meal. Offerings were scarce and hard to obtain and demand was particularly good from the feed trade. The market is about $70 per ton today, f. o. b. production points.

Hoof Meal. Last sales made on basis of $6.75 per unit of ammonia, ($8.20 per unit N), f. o. b. Chicago, with only a limited amount offered.

Superphosphate. With several new plants now operating for the production of triple superphosphate, an easier supply situation is expected, although Spring demand will probably equal last year's shipments as the trend is toward high analysis mixed goods. Regular superphosphate was in good supply.

Potash. Shipments were reported going forward on contract and a slight increase in shipments was noted recently. Sulfate of potash is expected to remain in short supply for the balance of this season, with some offerings of imported material noted.

Philadelphia

November 12, 1954

The materials market is considerably easier and shipments against contract are not too active. Blood is holding firm and steamed bone is strong. Packing-house tankage is easier. Nitrogenous tankage is exceedingly scarce, and castor pomace is still off the market. Sulfate of ammonia and nitrate of ammonia are quiet and in ample supply. Demand for superphosphate remains seasonal, and potash movement against contracts is developing more favorably.

Sulfate of Ammonia. Market is fairly steady but movement is lagging somewhat. Present prices have been extended through May, 1955.

Nitrate of Ammonia. Production has increased, but the demand is weak and stocks are accumulating.

Nitrate of Soda. The usual seasonal quietness prevails. Supplies are quite sufficient for all requirements, and stocks are building up for the Spring.

Anhydrous Ammonia. Supply is abundant and inquiries limited. Production has increased considerably.

Blood- Tankage- Bone. Blood is lower at $7.25 to $7.50 per unit ammonia ($8.82 to $9.12 per unit N) here in the East, and $7.75 per unit ($9.42 per unit N) Chicago. Tankage is also down, at $6.75 ($8.20 per unit N) in the East and $7.50 ($9.12 per unit N), Chicago. Steamed bone is stronger at $65 per ton, with quantity limited.

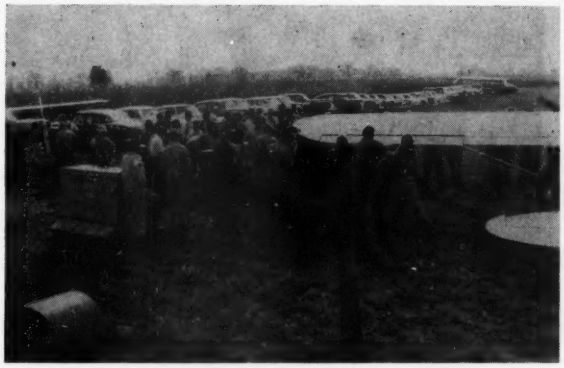
Castor Pomace. While $30 per ton was previously suggested as a nominal price for this material, there are no present offerings, and a higher price is implied.

Fish Scrap. Fishing operations have ceased, and the market for menhaden meal is steady, with no urge to sell. Meal is priced at $137.50 to $140 per ton, and $132.50 to $135 for scrap.

Phosphate Rock. Shipments against domestic contracts are proceeding at a fairly satisfactory rate, but export movement is still hampered by high ocean freight rates and shortage of vessels.

Superphosphate. Supplies of both normal and triple are comfortable, and movement is seasonably normal.

Potash. Shipments on contracts are moving favorably and increased activity is in sight.



TOP: Part of field day group inspects airplane sprayers. BOTTOM LEFT: Farmers showed interest in new attachment for applying liquid fertilizer in the row with corn planter. BOTTOM RIGHT: Na-Churs Vice Pres. Martin explains background and use of liquid fertilizer.

Na-Churs Field Day

NA-CHURS Plant Food co., Marion, Ohio, sponsored a field day in October during which some 300 growers from north-central Ohio visited four farms where corn tests have been conducted by Dr. V. A. Tiedjens, Na-Churs' director of research.

Purpose of the event, according to B. Peterson, president of the concern, was to show results of spray applications to field crops, to demonstrate results obtained with the company's new 10–20–10 liquid fertilizer formula and to review tests made in spplying liquid fertilizers in rows while corn is planted.

New 10–20–10 Formula Announced

The 10–20–10 formula which was announced for the first time at the field day takes the place of a 7–14–7 mixture previously marketed by Na-Churs. Peterson told growers that the material actually represents a decrease in price.

New equipment was shown for applying fertilizer with a corn planter. Also on display was a ground sprayer and airplane equipment used in foliage spraying.

Program Participants

Taking part in the program were the owners and operators of the demonstration farms and Na-Churs' representatives including, in addition to Peterson and Tiedjens, Thayer Martin, general manager, and district representatives Ralph Humes and Harold Limbach. ◆

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editorial

Mis-Use of Pesticides

FROM reports during the past year concerning continued mis-use of organic phosphate insecticides, it would appear that a king-sized educational task remains to be done.

In the last issue, we reported on an ordinance adopted by Sarasota, Fla., that prohibits the use of most of these materials within the city limits. The regulations came as a result of what seems to have been gross mis-application of parathion in residential areas.

In his letter explaining the move, B. Harold Farmer, Sarasota city administrative assistant, pointed out that other cities had already passed such measures including Lakeland, Fla., with a ruling that prohibits the use of parathion.

The state Department of Agriculture and Health in Oregon are reported working with Oregon State College in an educational campaign that was precipitated by two deaths and a number of illnesses supposedly resulting from pesticide usage.

An announcement from Allen B. Lemmon's California Bureau of Chemistry reviews some of the cases of organic phosphate poisoning that have occurred in that state from February through September of this year. Most involve a total disregard of the usual precautionary measures which should be taken when handling such materials and some were attributed in part to a "deplorable lack of ordinary personal cleanliness."

SO THAT readers of the report don't get the idea that the fault involves bad products or mis-labeling, the report states that "insofar as could be determined, the product involved in each one of these accidents was properly registered and adequately labeled according to present requirements."

Some of the applicators who required hospitalization during this period were supposedly experienced in handling the pesticides while others, including some Mexican Nationals, had not previously worked with them. In the majority of cases, experienced or not, protective clothing and respirators were lacking.

Four persons died—one 18 month old baby, a three year old boy, an eight year old helping dust strawberries with parathion and a pilot who was covered with dust in a forced landing. In the latter case it is reported only that there were "symptoms indicative of TEPP poisoning."

As previously noted, the labeling on pesticides involved in these accidents, in every case, conformed to specifications. Despite this, accidents occurred and, unfortunately, will continue to occur until effective educational efforts are organized.

The California bureau report comments that, "if the definite value of these pesticides to agriculture is not to be lost in legal restrictions, some way must be found to keep them from irresponsible hands and to educate every user in the proper way in which they should be handled."

This certainly indicates greater effort on the part of industry as well as Federal or state agencies, for who has more to lose through added restrictive legislation or increased liability difficulties. In addition, we can ill afford to lose the benefits derived from development of these marvelous chemicals.

A sidelight, perhaps, is the use to which these accident reports are put by the organic faddists and others who continue to deplore the use of pesticides or chemicals of any kind. Their conclusions are false, their evidence is not sound and, in some cases, their purpose is questionable, but their efforts can have a deleterious effect on some areas.

WHAT can be done? From the cases cited, it is evident that the farm operator, in too many cases, does not bother to inform workmen on proper use of pesticide materials. Worse yet, he often does not provide even a minimum of precautionary clothing and respiratory devices.

The dealer must cooperate in impressing, constantly, on the farmers he serves, the need for cautions and sensible application and handling methods. It will be to the benefit of industry if field men and others in contact with the market continue and expand their efforts to publicize the ground rules of proper pesticide usage.

This is admittedly an old theme, one that some may be tired of hearing, but it is only through repetition that an effective job can be done.

Another part of the overall problem showed up in the California bulletin—informing doctors of the proper treatments and antidotes for accidental poisoning. In one case the doctor who gave emergency treatment to a patient affected by parathion was not familiar with proper treatment. On the patient's assurance that he (the patient) knew the correct antidote, the doctor administered atabrine. The patient lived but it would certainly have been better if atropine, the correct antidote, had been used.

If you have not informed doctors in your area concerning the proper treatment and antidote for pesticides marketed in the territory, make it a point to do so. You may, in the long run, save a customer.

G. P. T., JR.
Managing Editor

Chemicals

352—Dixsol Solutions

A two-page technical data sheet from Commercial Solvents provides general information on Dixsol nitrogen solutions. Included are data on crystallization temperatures, shipping and storage, containers, safety precautions and first aid measures, in addition to tables of composition and physical properties. For a copy

CIRCLE 352 ON SERVICE CARD

353—Curing Agent

Details are available on the use of Sulframin AB-40 powder in fertilizer production as a curing and anti-blocking agent. Chemical name of the material, made by Ultra Chemical Works, is dodecyl benzene sulfonate.

CIRCLE 353 ON SERVICE CARD

354—New Ammonia Source

If you are contracting for 1955 deliveries of ammonia don't forget that the new Natrium, W. Va. plant of Columbia-Southern will go on stream early in the year. You may find it desirable to consider this new production for your purchase requirements. For information

CIRCLE 354 ON SERVICE CARD

355—Arcadian Nitrates

Nitrogen division Arcadian nitrate of soda is available in coarse, medium and fine grades for shipment by boat, barge, rail or truck from Hopewell. The coarse grade has large triple screened crystals with free-flowing, non-caking and non set-up qualities, and the medium crystals do not crush or create fines, according to N division. For free samples.

CIRCLE 355 ON SERVICE CARD

356—Velsicol AR-Solvents

The AR-solvent series from Velsicol corp. permits extreme latitude in selection of solvents for particular applications and can be used for agricultural or household applications. The materials possess high flash points, are non corrosive to metals, have a high boiling range, are stable with high solvency range for toxicants and help produce solutions stable over a wide temperature range. For a technical bulletin with latest data

CIRCLE 356 ON SERVICE CARD

FREE INFORMATION to help you solve fertilizer, pesticide problems

Reader Service

357—For. Fert. Mixers

John Powell suggests that fertilizer producers can use their existing distribution channels, plant, labor and overhead to fill the vacuum of seasonal plant food sales with insecticide sales. Advantages include even sales distribution, diversification, bigger dollar volume, possible new customers, building the firm name. If you want more information

CIRCLE 357 ON SERVICE CARD

How to use the READER SERVICE CARD

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358—Improved Sulfoxide

New improved Sulfoxide, according to S. B. Penick, is the answer to the need for an aerosol formulation highly effective against roaches and flies yet safe for kitchen use. This synergist for pyrethrum produces no nasal irritation. For more information

CIRCLE 358 ON SERVICE CARD

359—Distributors Wanted

Nuodex Products co. is looking for distributors to handle its new farm wood preservative, Cona-Six. A copper naphthenate formulation, the product is safe to user, livestock and growing plants and is thirfty and easy to use. If interested

CIRCLE 359 ON SERVICE CARD

360—Lindane for Wheat

Wyandotte 75 per cent lindane is a special micronized product that provides better protection for wheat seed against wire worms, cut worm grubs, seed corn maggots and other pests. It can be used with a fungicide and works well in slurry or dusting methods. For samples and additional data

CIRCLE 360 ON SERVICE CARD

361—Amsco Solvents

American Mineral Spirits has available a catalog which serves as a reference for selecting petroleum solvents. Included is a comprehensive list of aliphatic naphthas, paraffinic hydrocarbons and aromatic hydrocarbons and solvents, together with typical properties. For a free copy

CIRCLE 361 ON SERVICE CARD

362—Ethanolamines

Nitrogen division is scheduled to begin production of mono-,di- and tri-ethanolamine early next year. All will be available in tank cars, tank trucks and drums at storage points throughout the country. For technical literature

CIRCLE 362 ON SERVICE CARD

363—Intermediates

A booklet from Michigan Chemical describes the company's line of individualized intermediates for organic synthesis. Provided is complete information including specifications, descriptions and properties. To obtain a copy

CIRCLE 363 ON SERVICE CARD

Process Equipt.

364—Renneburg Equipment

A catalog has been issued by Edw. Renneburg & Sons reviewing its entire line of chemical processing, fertilizer, fish reduction and food processing equipment. A new DehydrO-Mat unit is featured.

CIRCLE 364 ON SERVICE CARD

See the Industry News section, pages 18-19 for information on these Reader Service numbers—

384—IMC Materials
385—Fluopacker
386—Rapistan Flattener
387—Air Stapler
388—Howe Weightograph
389—AL Bin-Dicator
390—Yale Warehouser

365—Den & Excavator

A four page bulletin describes the Sturtevant Mill den and excavator, a two man unit with capacities from 16 to 40 tons per batch. The cycle of operation requires only one hour for the smaller size and two hours for the 40 ton unit in producing a bulky, yet granular, superphosphate.

CIRCLE 365 ON SERVICE CARD

366—Davenport Dryers

Complete information is available on the Davenport Machine and Foundry line of dryers. Included in the catalog is information on construction features, sizes and capacities of steam tube, direct fired and hot air rotary dryers and air or water tube rotary coolers. These will be of special interest to those contemplating granulated fertilizer production. For a copy of the catalog

CIRCLE 366 ON SERVICE CARD

367—S-W Pelleter

If you are interested in making a pelleted product, the Sprout-Waldron continuous pelleter will be of interest. The unit produces small and large sizes in volume with a product that has reduced dusting characteristics while retaining physical and chemical properties. Pelleted materials flow easily and have sales appeal. For details

CIRCLE 367 ON SERVICE CARD

Materials Handling

368—Payloader Attachments

New attachments for Hough Payloaders are featured in new literature. Included are 16 units such as rotary V and trip-blade snow plows, hydraulic backhoe, crane hook, lift fork, winches, caps, etc. In addition the entire Payloader line is shown.

CIRCLE 368 ON SERVICE CARD

369—Link-Belt Drives

Link-Belt variable speed drives are described in an 88-page book. The drives, available in eight sizes and 16 types, are available over a wide range of speeds and are reliably constant over long periods.

CIRCLE 369 ON SERVICE CARD

370—UL Labeled Trucks

Automatic Transportation has released information on its complete line of Underwriter Lab approved type EE industrial trucks. These units range from compact, operator led trucks to 6,000 lb. capacity fork lifts and represent a full line of equipment for semi-hazardous locations. For a folder

CIRCLE 370 ON SERVICE CARD

371—Carriers & Rollers

Stephens-Adamson has a bulletin on its carriers and return rollers designed for improved belt conveyor performance. The unit features precision ball bearings, double labyrinth seal and a one piece all steel welded frame. For a copy

CIRCLE 371 ON SERVICE CARD

372—Jeffrey Idlers

Details are available on the Jeffrey Mfg. HD and MD idler series featuring the Duoflex seal. The idlers are factory lubricated, adjusted and sealed to keep dirt out and belt-damaging grease in for the life of the units. A type and size is available for every need.

CIRCLE 372 ON SERVICE CARD

373—Drum Dumper

Gifford-Wood has a new portable drum dumper for mechanically elevating and emptying containers into high-walled receptacles. The unit is easily moved and push button operation eliminates manual handling. For a data sheet

CIRCLE 373 ON SERVICE CARD

374—Liquid Fert. Handling

Information is available on the Acme-Fisher system for profitable handling of liquid fertilizers. The company supplies Laybond acid-proof tanks and fittings and rubber-lined tanks designed to resist corrosive materials. Included are storage tanks and mixing and tank truck units. A folder is available.

CIRCLE 374 ON SERVICE CARD

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- **Clip and mail the Service Card.**

375—Storage Tanks

Bulk storage tanks from Graver Tank & Mfg. are produced in a variety of styles and sizes and are adaptable for storage of solvents, feed stocks and chemicals of all kinds. A 14 page brochure provides data on horizontal, vertical and underground units.

CIRCLE 375 ON SERVICE CARD

376—Nor-Tex Tanks

North Texas Tank produces anhydrous ammonia tanks in all sizes—storage units, lightweight applicator tanks, tandem tanks for delivery trucks and twin barrel transports. For literature and prices

CIRCLE 376 ON SERVICE CARD

Construction

377—Girdler-DuPont HNO_3

Girdler nitric acid plants employ the DuPont process using high pressure catalytic oxidation which produces 55–60 per cent acid with efficient use of catalysts and low utility requirements. A booklet with detailed description is available.

CIRCLE 377 ON SERVICE CARD

378—Chemico Urea

Complete details are available on the Chemical Construction process for urea production. Return of excess and recovered ammonia enables the units to produce more urea per pass reducing the amount of unconverted carbamate and reducing the amount of ammonia to be recovered. Records show actual conversion of 76 per cent in the presence of 200 per cent excess ammonia.

CIRCLE 378 ON SERVICE CARD

379—Stefco Buildings

Stefco Mfg. panel style steel buildings are erected faster with less field labor and are flexible to meet job requirements with low first cost, erection and maintenance expenses. Insulation can be supplied already installed as part of the sidewall panels, and roof insulation can form a flat ceiling. Panel design, factory assembled with windows, doors and flashing, etc. eliminates field fitting. For information

CIRCLE 379 ON SERVICE CARD

Packaging

380—Acid Drums

Two-piece Hackney acid drums from Pressed Steel Tank feature smooth interiors, extra smooth butt weld and seamless formed chime. I-bar hoops protect against knocks and on larger sizes a heavy curled foot ring reinforces the chime. For the new drum and barrel catalog

CIRCLE 380 ON SERVICE CARD

Miscellaneous

381—Instrumentation

The Fischer & Porter line of process instruments includes flow meters, liquid level instruments, temperature and pressure units, transmitting, recording and controlling instruments. All are described in a new general catalog which also includes some data on centralized control panels.

CIRCLE 381 ON SERVICE CARD

382—Special Services

A booklet from Foster D. Snell on product evaluation and physical testing lists the organization's specialized services in developing, improving and evaluating products and describes the various testing facilities. For a copy

CIRCLE 382 ON SERVICE CARD

383—Gas Analyzers

Information on combustible gas analyzers and alarms is included in a 20 page brochure from Mine Safety Appliances. It contains descriptions of instruments designed to protect against most known combustible gases and vapors showing installations and a method of designing a gas alarm system.

CIRCLE 383 ON SERVICE CARD

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Shell Chemical Co., Agr. Chem. Div., Denver, Colo.

AMMONIA—Anhydrous and Liquor
Commercial Solvents Corporation, New York City
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Lion Oil Co., El Dorado, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIA APPLICATORS
KBH Corp., Clarksdale, Miss.

AMMONIUM NITRATE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Commercial Solvents Corporation, New York City
Lion Oil Co., El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM PHOSPHATE
Monsanto Chem. Co., St. Louis, Mo.

AMMONIUM SULFATE
See Sulfate of Ammonia

AMMONIUM SULFATE NITRATE
Baker & Bro., H. J., New York City

BAGS—Multiwall-Paper
Chase Bag Co., Chicago
International Paper Co., Bagpak Div., N. Y. C.
Hammond Bag & Paper Co., Wellsburg, W. Va.
Hudson Pulp & Paper Corp., N. Y. C.
Kraft Bag Corporation, New York City
Union Bag & Paper Corp., New York City

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES
International Paper Co., Bagpak Div., N. Y. C.

BAG PRINTING MACHINES
Schmutz Mfg., Louisville, Ky.

BAG FILLING MACHINES
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

BHC AND LINDANE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Diamond Alkali Co., Newark, N. J.
Pennsylvannja Salt Mfg. Co., of Wash., Tacoma, Wash.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div. Pittsburgh, Pa.

BONE PRODUCTS
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID
Woodward & Dickerson, Inc., Philadelphia, Pa.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BUCKETS—Hoist, Crane, etc.
Hayward Company, The, New York City

CALCIUM ARSENATE
American Agricultural Chemical Co., N. Y. C.

CARS AND CART
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

CASTOR POMACE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
McIver & Son, Alex. M., Charleston, S. C.

CHEMISTS AND ASSAYERS
Shuey & Co., Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

CHLORDANE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

CLAY
Ashcraft-Wilkinson Co., Atlanta, Ga.

CONDITIONERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
National Lime & Stone Co., Findlay, Ohio

CONVEYORS
Power-Curve Conveyor Co., Denver, Colo.
Link-Belt Co., Chicago, Ill.

COPPER SULFATE
Republic Chemical Corp., New York City
Tennessee Corp., Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa

CUSTOM PESTICIDE FORMULATION
Barco Chemicals, Inc., Des Moines, Ia.

DDT
Ashcraft-Wilkinson Co., Atlanta, Ga.
Diamond Alkali Co., Newark, N. J.
Michigan Chemical Corp., St. Louis, Mich.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

DIELDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.

DILUENTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Calcium Carbonate Co., Chicago, Ill.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Summit Mining Corporation, Carlisle, Pa.
Thomas Alabama Kaolin Co., Baltimore, Md.

DITHIOCARBAMATES
Berkshire Chemicals, New York City

ELEVATORS
Power-Curve Conveyor Co., Denver, Colo.
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Fairlie, Inc., Andrew M., New York City
General Industrial Development Corp., N. Y. C.
Marietta Concrete Corporation, Marietta, Ohio
Stedman Foundry and Machine Co., Aurora, Ind.
Titlestad Corporation, Nicolay, New York City

FERTILIZER—Liquid
Clover Chemical Co., Pittsburgh, Pa.

FERTILIZER—Mixed
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.

FILLERS
Bradley & Baker, N. Y. C.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

FULLER'S EARTH
Ashcraft-Wilkinson Co., Atlanta, Ga.

FUNGICIDES
American Agricultural Chemical Co., N. Y. C.
Berkshire Chemicals, New York City
Pittsburgh Coke & Chemical Co., Agr. Chem. Div. Pittsburgh, Pa.
Republic Chemical Corp., New York City
Tennessee Corp., Atlanta, Ga.

HERBICIDES
Diamond Alkali Co., Newark, N. J.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div. Pittsburgh, Pa.

HERBICIDES—Oils
Lion Oil Company, El Dorado, Ark.

HOPPERS & SPOUTS
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
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Berkshire Chemicals, New York City
Diamond Alkali Co., Newark, N. J.
Fairfield Chem. Div., Food Mach. & Chem. Corp., New York City
Michigan Chemical Corp., St. Louis, Mich.
Pennsylvanna Salt Mfg. Co., of Wash, Tacoma, Wash.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div. Pittsburgh, Pa.
Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.

IRON SULFATE
Tennessee Corp., Atlanta, Ga.

KAOLIN
Thomas Alabama Kaolin Co., Baltimore, Md.

LEAD ARSENATE
American Agricultural Chemical Co., N. Y. C.

LIMESTONE
American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
National Lime & Stone Co., Findlay, Ohio

Buyers' Guide

MACHINERY—Acid Making and Handling
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Acidulating
Chemical Construction Corp., New York City

MACHINERY—Grinding and Pulverizing
Atlanta Utility Works, The, East Point, Ga.
Bradley Pulverizer Co., Allentown, Pa.
Nutri-Sol Chemical Co., Tampa, Fla.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Material Handling
Atlanta Utility Works, The, East Point, Ga.
Clark Equipt. Co., Construction Mach. Div., Benton Harbor, Mich.
Hayward Company, The, New York City
Hough, The Frank G. Co., Libertyville, Ill.
Jaeger Machine Co., Columbus, O.
Lessman Mfg. Co., Des Moines, Ia.
Link-Belt Co., Chicago, Ill.
Poulsen Co., Los Angeles, Calif.
Power-Curve Conveyor Co., Denver, Colo.
Sauerman Bros. Inc., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Mixing, Screening and Bagging
Atlanta Utility Works, The, East Point, Ga.
Nutri-Sol Chemical Co., Tampa, Fla.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Power Transmission
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY
Superphosphate Manufacturing
Atlanta Utility Works, The, East Point, Ga.
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.

MAGNESIUM SULFATE
Berkshire Chemicals, New York City

MANGANESE SULFATE
Tennessee Corp., Atlanta, Ga.

MANURE SALTS
Potash Co. of America, Washington, D. C.

MINOR ELEMENTS
Tennessee Corporation, Atlanta, Ga.

MIXERS
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

NITRATE OF POTASH
Berkshire Chemicals, New York City

NITRATE OF SODA
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
McIver & Son, Alex. M., Charleston, S. C.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
International Min. & Chem. Corp., Chicago, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NITROGEN SOLUTIONS
Commercial Solvents Corporation, New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Lion Oil Company, El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

NITROGEN MATERIALS—Organic
American Agricultual Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Smith Rowland Co., Norfolk, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

PARATHION
Ashcraft-Wilkinson Co., Atlanta, Ga.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

PENTACHLOROPHENOL
Monsanto Chemical Co., St. Louis, Mo.

PHOSPHATE ROCK
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID
American Agricultural Chemical Co., N. Y. C.
Monsanto Chemical Co., St. Louis, Mo.

PLANT CONSTRUCTION—Fertilizer and Acid
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
General Industrial Development Corp., N. Y. C.
Link-Belt Co., Chicago, Ill.
Monsanto Chemical Co., St. Louis, Mo.
Stedman Foundry and Machine Co., Aurora, Ind.
Titlestad Corporation Nicolay, New York City

PLANT SITES
Halliburton, Erle P., Clarkdale, Ariz.

POTASH—Muriate
American Potash & Chemical Corp., N. Y. C.
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Potash Co. of America, Washington, D. C.
Southwest Potash Corporation, New York City
United States Potash Co., N. Y. C.

POTASH—Sulfate
American Potash & Chemical Corp., N. Y. C.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
Potash Co. of America, Washington, D. C.

POTASSIUM PHOSPHATE
Monsanto Chemical Co., St. Louis, Mo.

PRINTING PRESSES—Bag
Schmutz Mfg. Co., Louisville, Ky.

PYROPHYLLITE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

REPAIR PARTS AND CASTINGS
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

SCALES—Including Automatic Baggers
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

SCREENS
Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

SPRAYS
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

STORAGE BUILDINGS
Butler Manufacturing Co., Kansas City, Mo.
Marietta Concrete Corporation, Marietta, Ohio

STORAGE TANKS
Broadway Rubber Corp., Louisville, Ky.
Butler Manufacturing Co., Kansas City, Mo.
Cole, R. D., Manufacturing Co., Newnan, Ga.

SULFATE OF AMMONIA
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Lion Oil Co., El Dorado, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA
International Min. & Chem. Corp., Chicago, Ill.

SULFUR
Ashcraft-Wilkinson Co., Atlanta, Ga.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying
Ashcraft-Wilkinson Co., Atlanta, Ga.
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

SULFURIC ACID
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SUPERPHOSPHATE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC
Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Smith-Rowland Co., Norfolk, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TANKS—NH3 and Liquid N
Birmingham Tank Co., Birmingham, Ala.
Broadway Rubber Corp., Louisville, Ky.
Butler Manufacturing Co., Kansas City, Mo.
Cole, R. D. Manufacturing Co., Newnan, Ga.

TEPP
Monsanto Chemical Co., St. Louis, Mo.

TOXAPHENE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr., Chem. Div., Pittsburgh, Pa.

2, 4-D
Diamond Alkali Co., Newark, N. J.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem Div., Pittsburgh, Pa.

2, 4, 5-T
Diamond Alkali Co., Newark, N. J.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

UREA & UREA PRODUCTS
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.

VALVES
Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

ZINC SULFATE
Tennessee Corp., Atlanta, Ga.

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GRANULAR MURIATE OF POTASH 60% K_2O MIN.

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